



FIG. 1

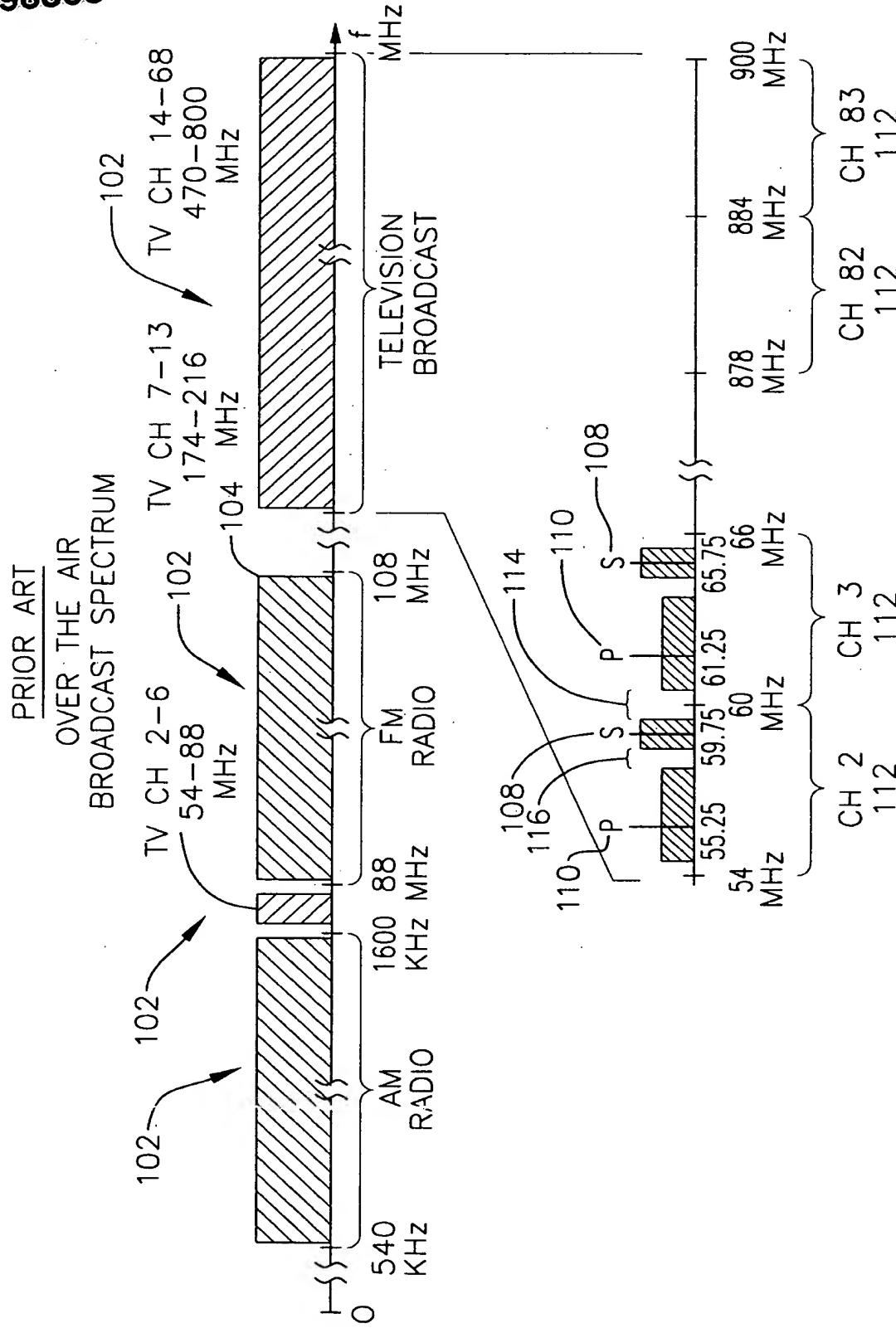




FIG.2

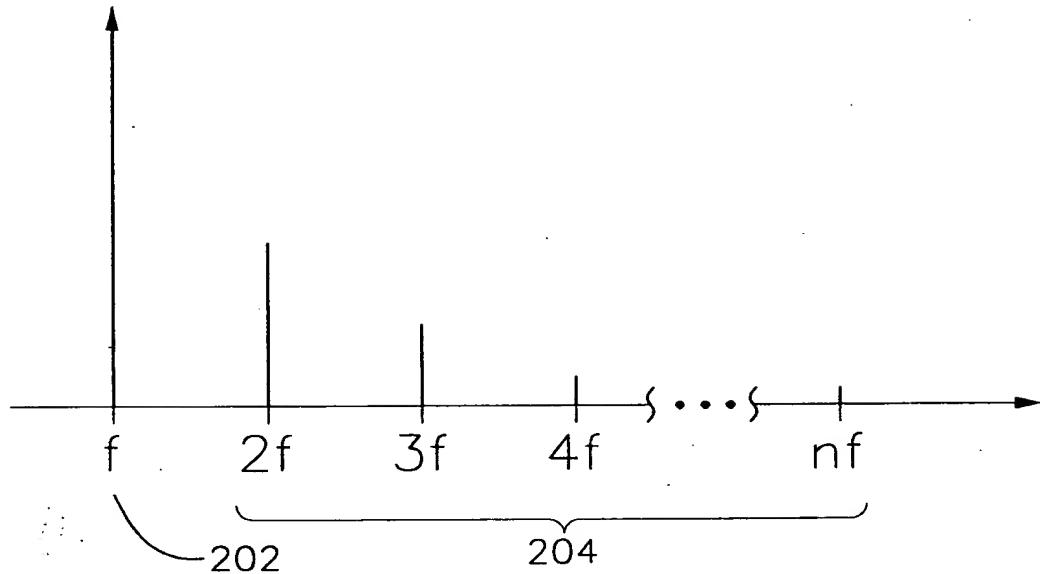
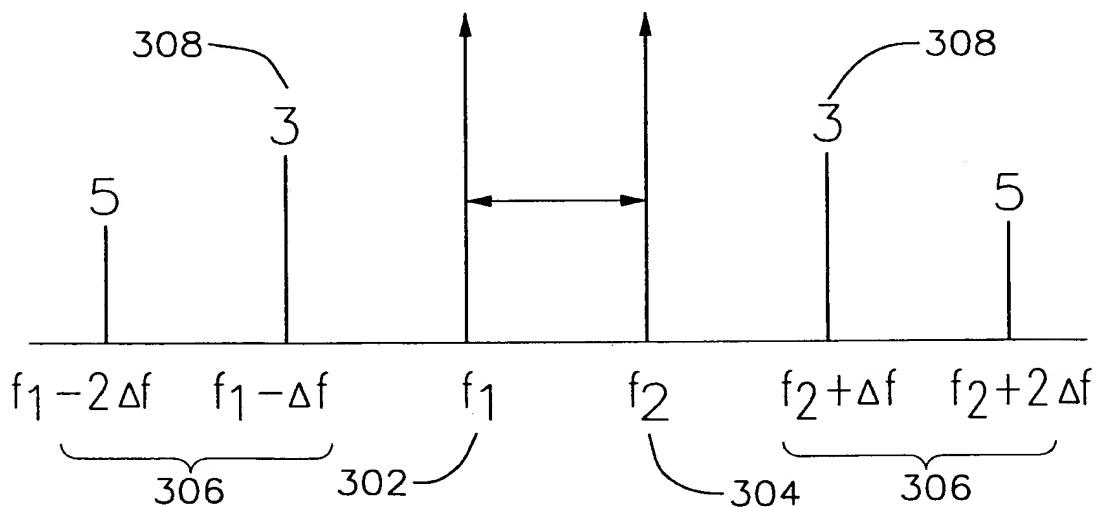
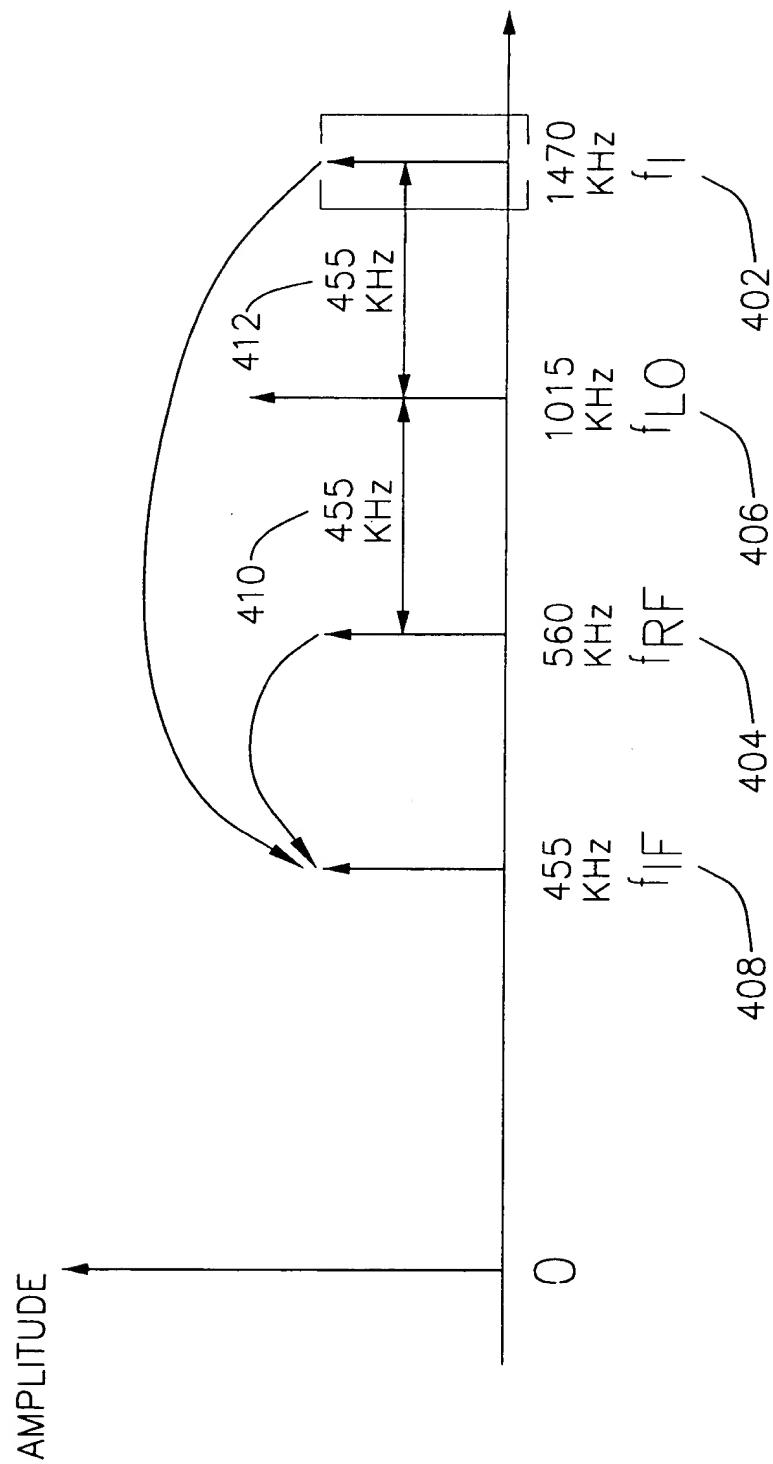


FIG.3  
PRIOR ART





**FIG. 4**      **PRIOR ART**





## FIG. 5 DUAL CONVERSION RECEIVER

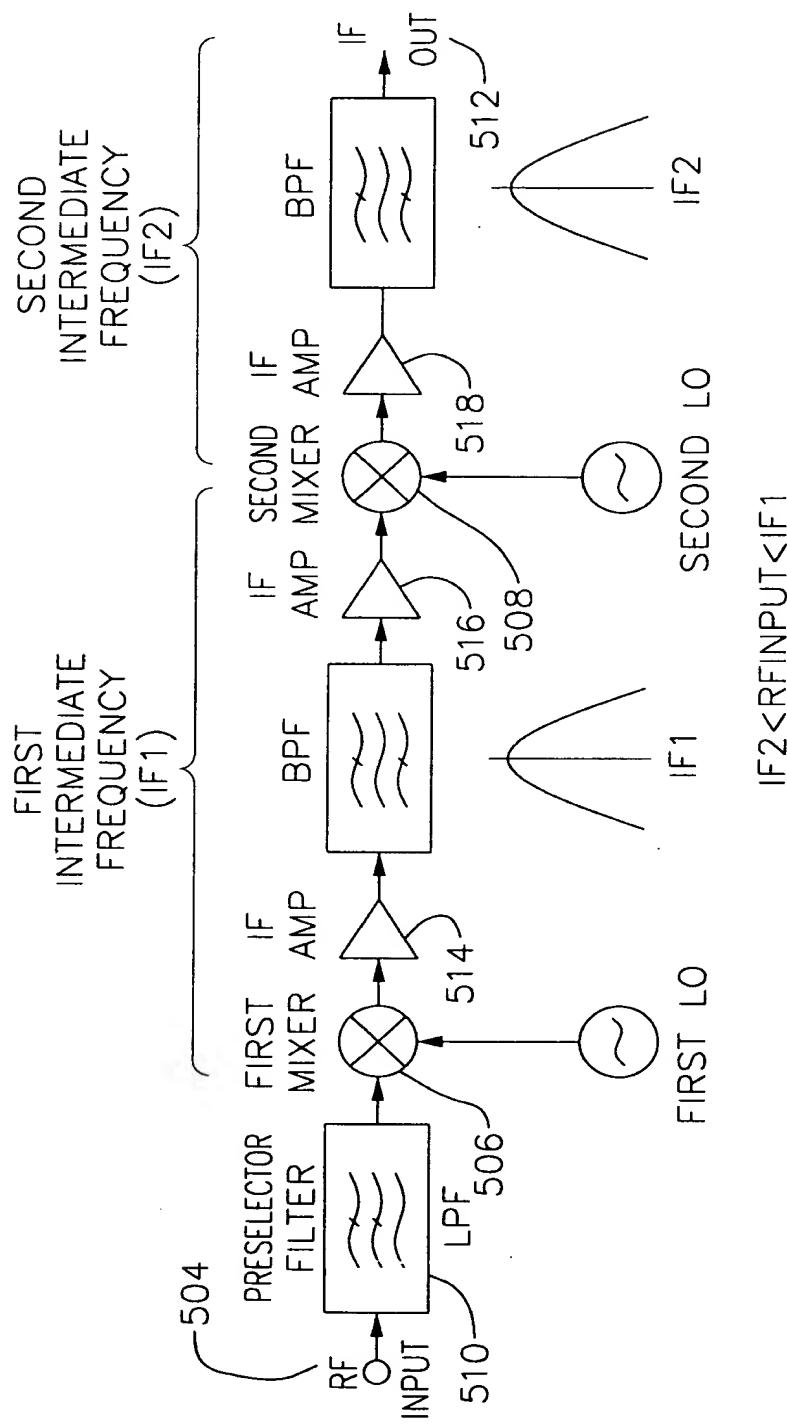




FIG. 6

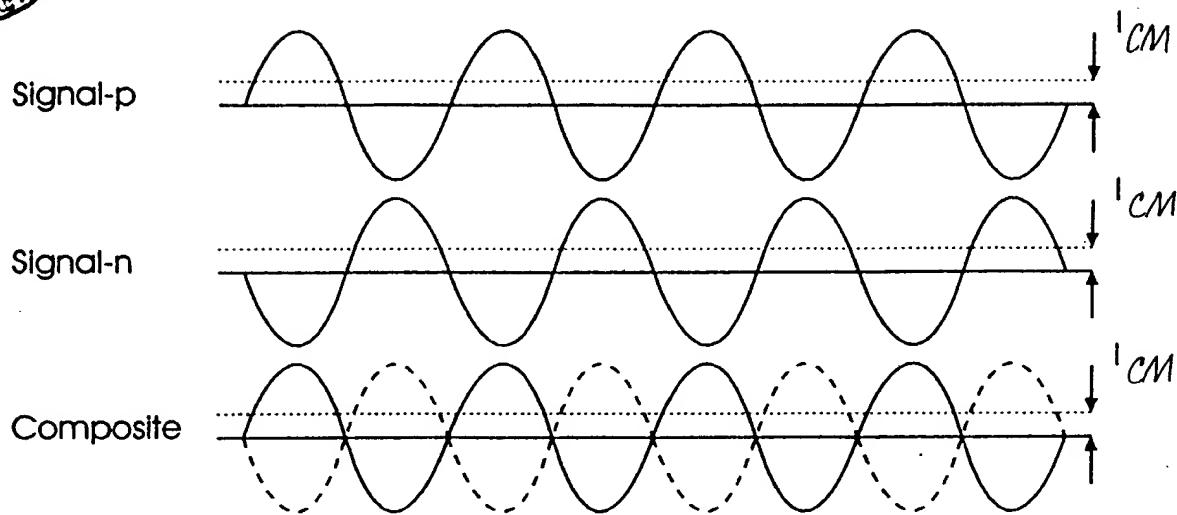


FIG. 7

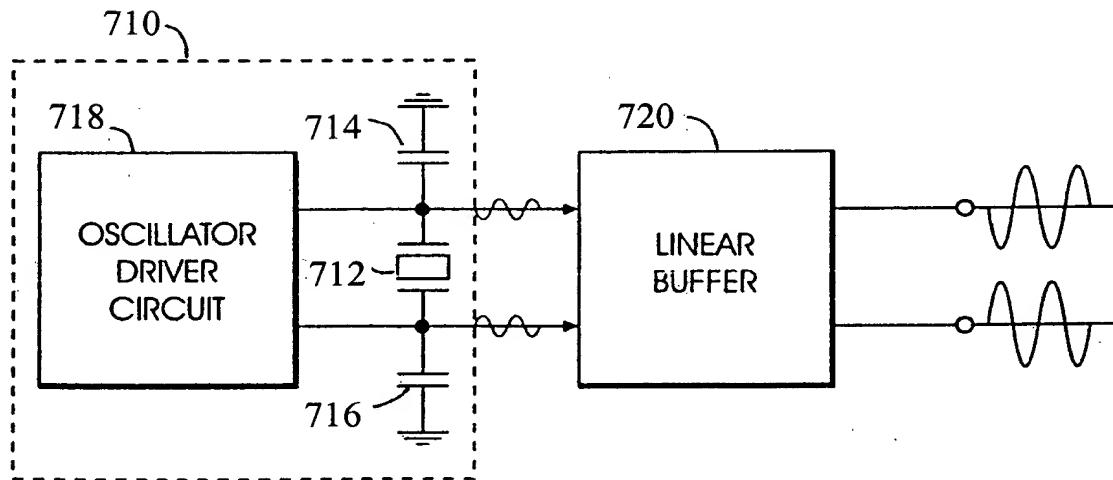




FIG. 8

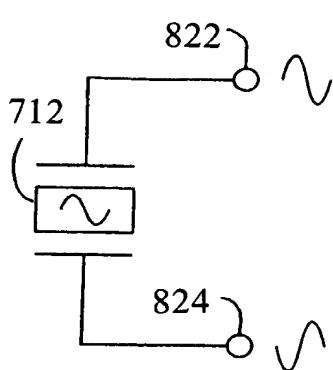


FIG. 9

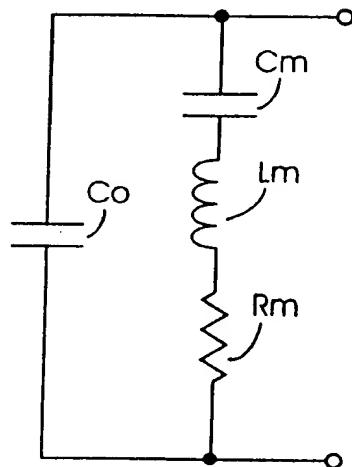


FIG. 10

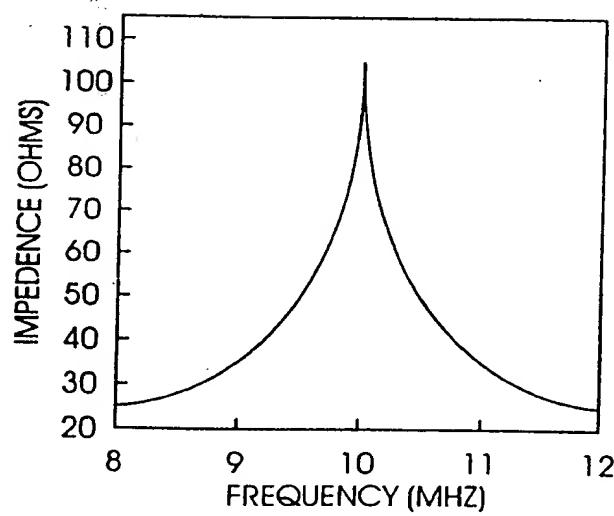
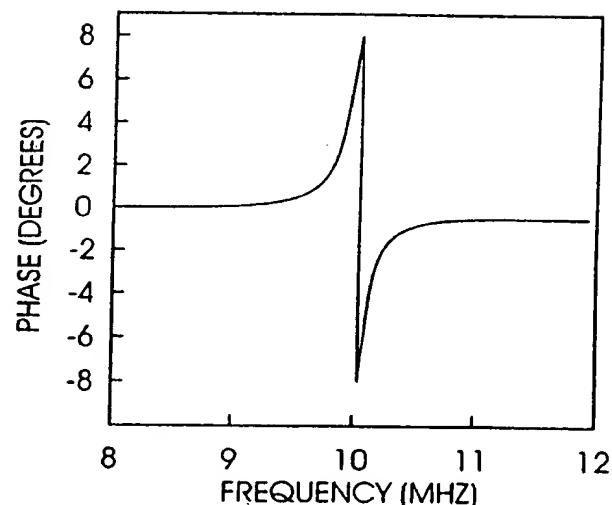


FIG. 11



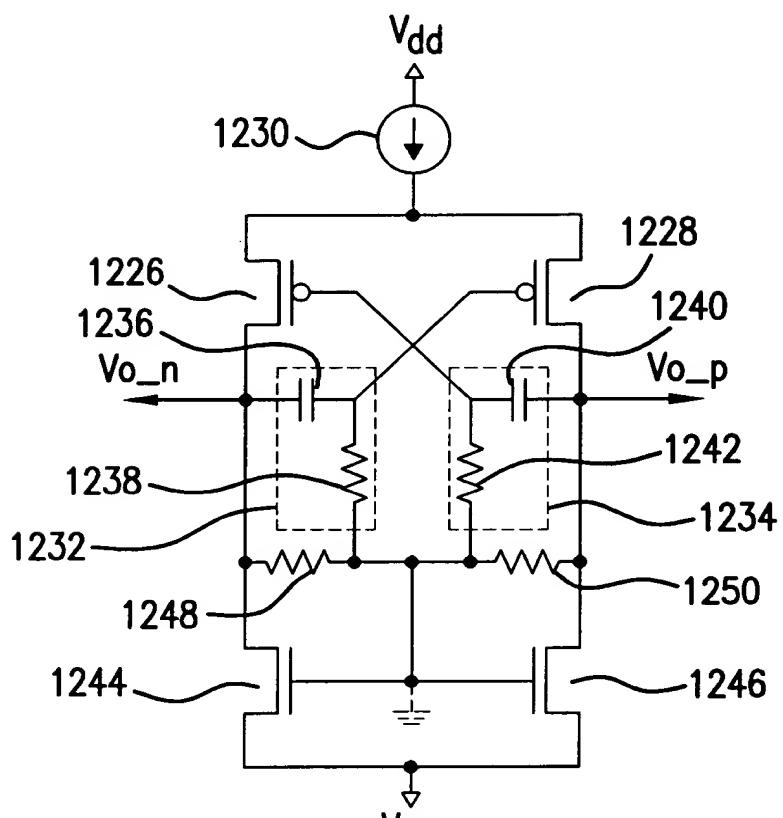


FIG. 12

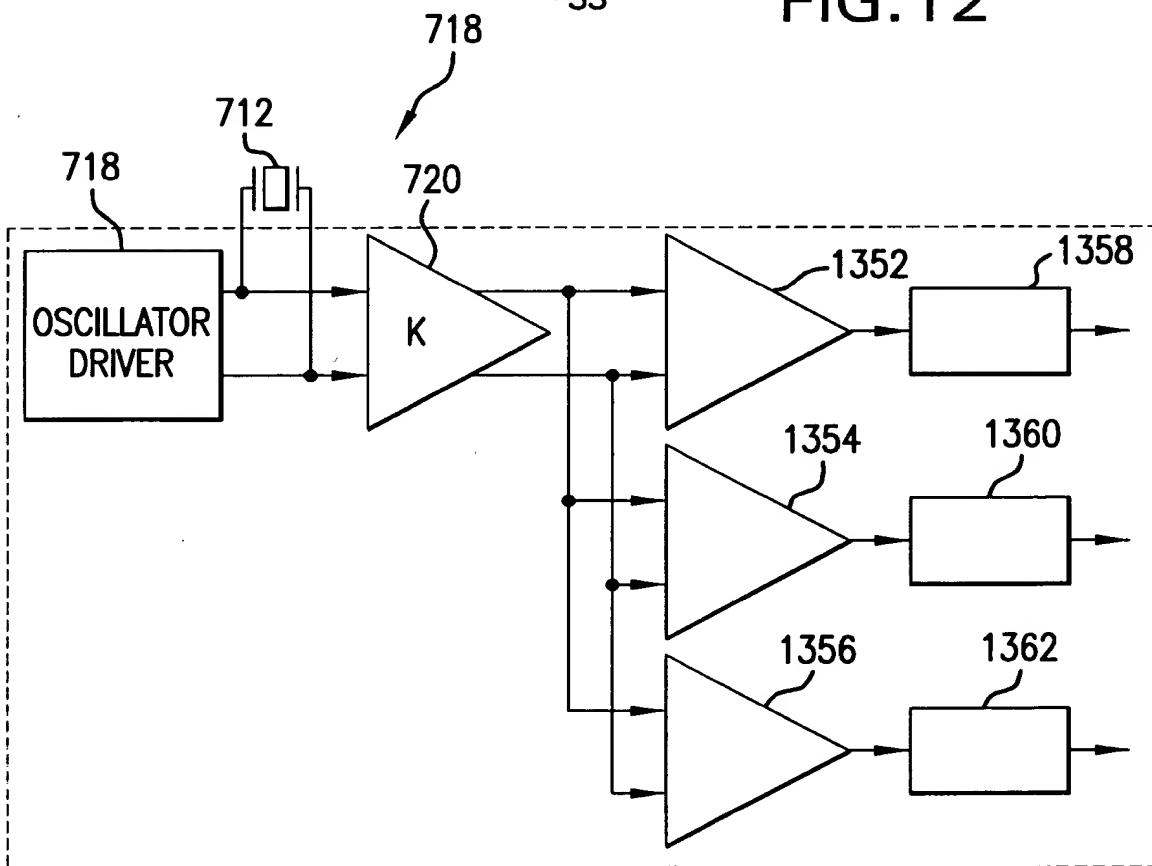
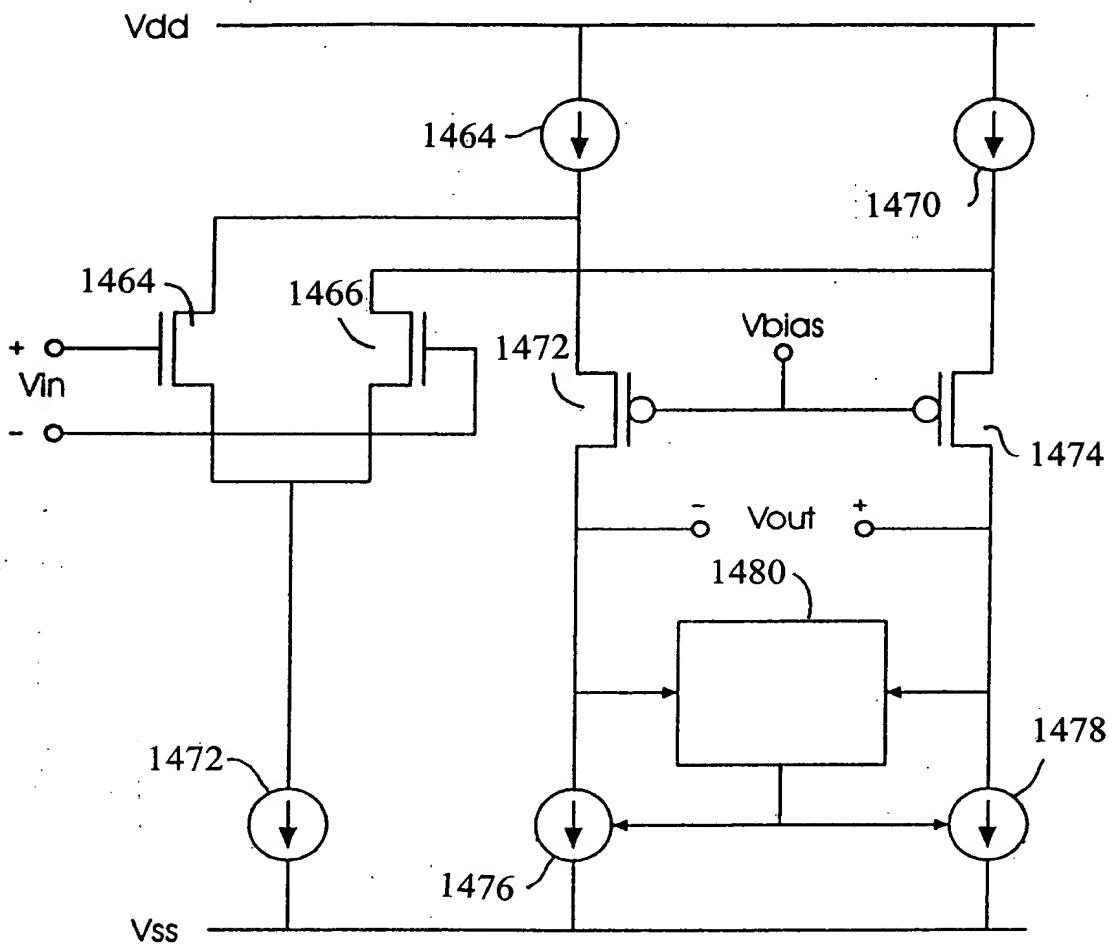


FIG. 13

Appl. No. 09/438,689; Filed: November 12, 1999  
Dkt. No. 1875.095000C; Group Art Unit: 2817  
Inventors: Ward *et al.*; Tel: 202/371-2600  
Title: Differential Crystal Oscillator



FIG. 14



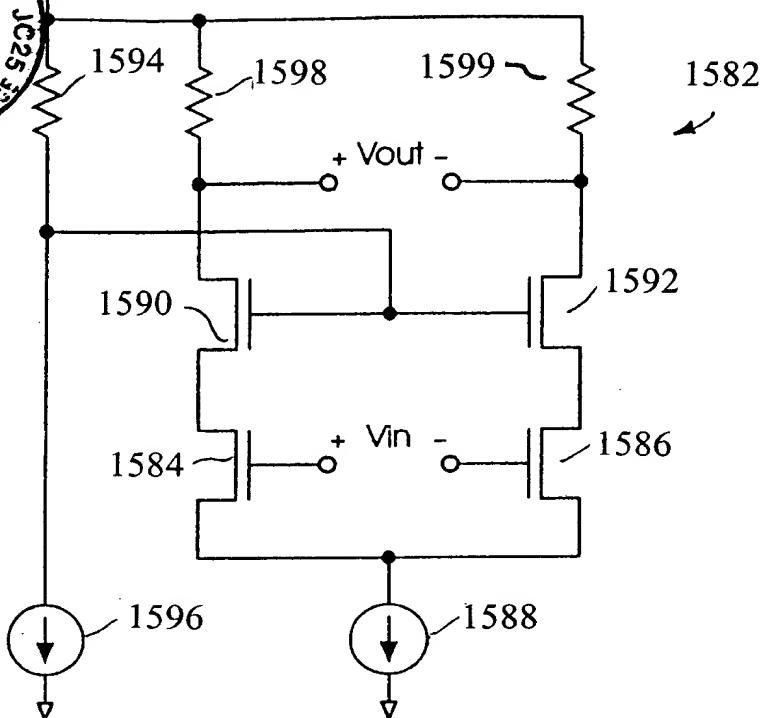


FIG. 15

FIG. 16

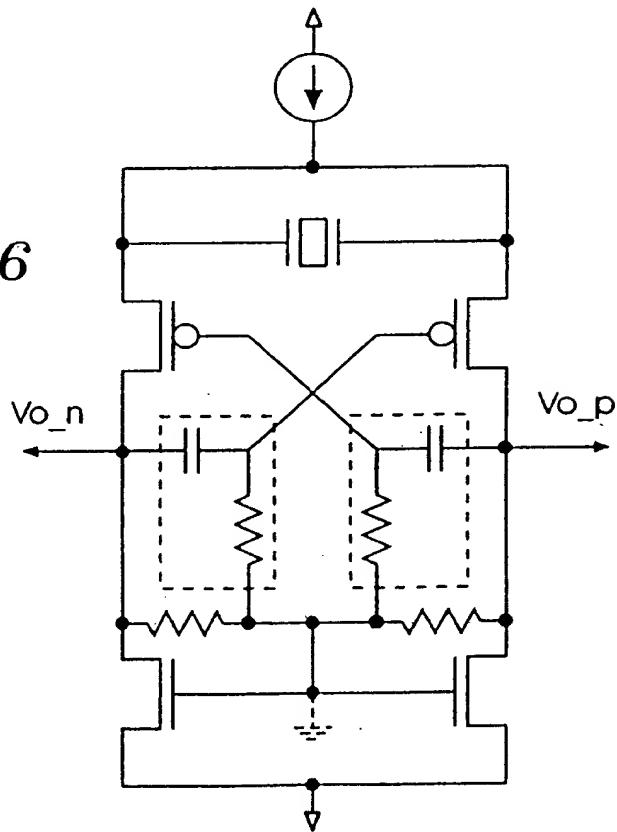




FIG. 17

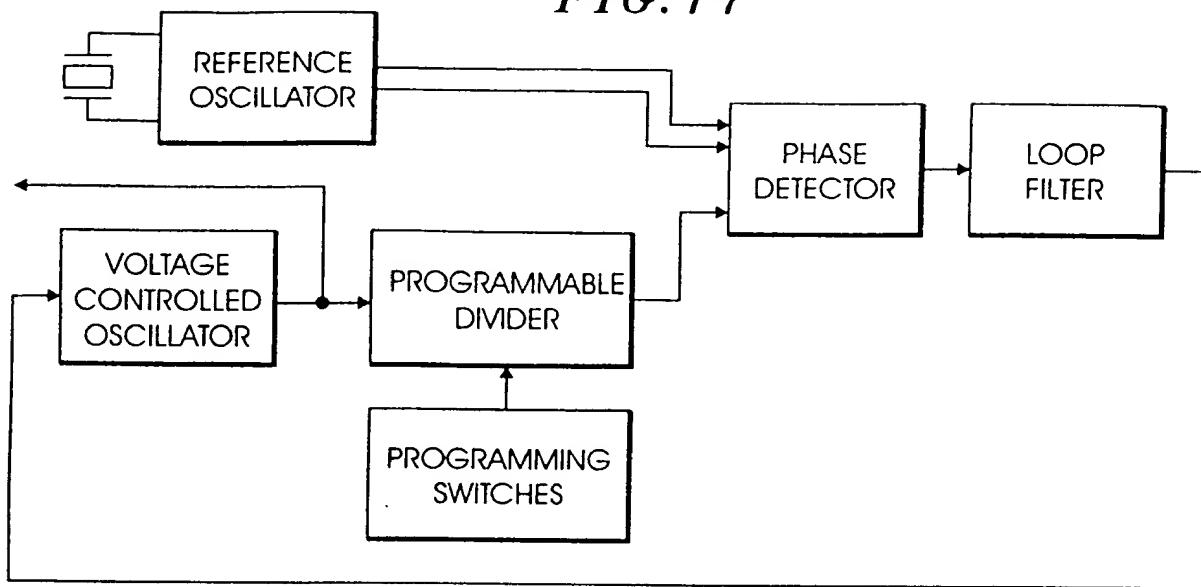


FIG. 18

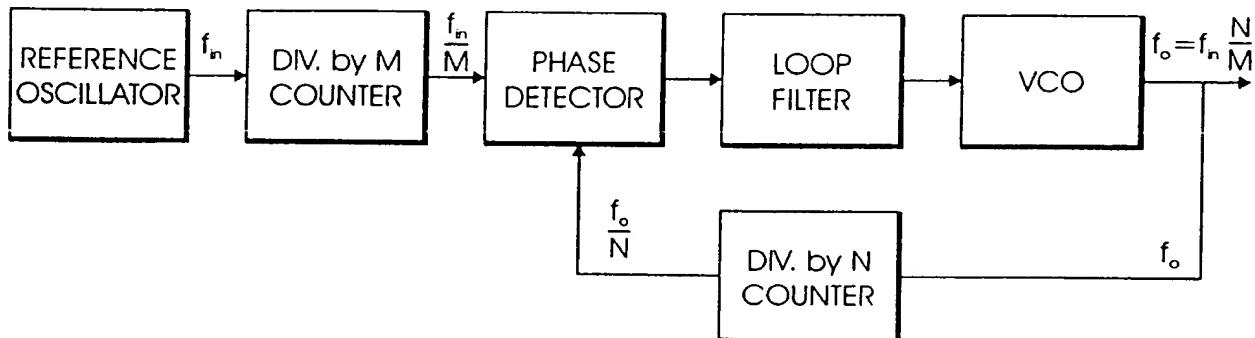




FIG. 19

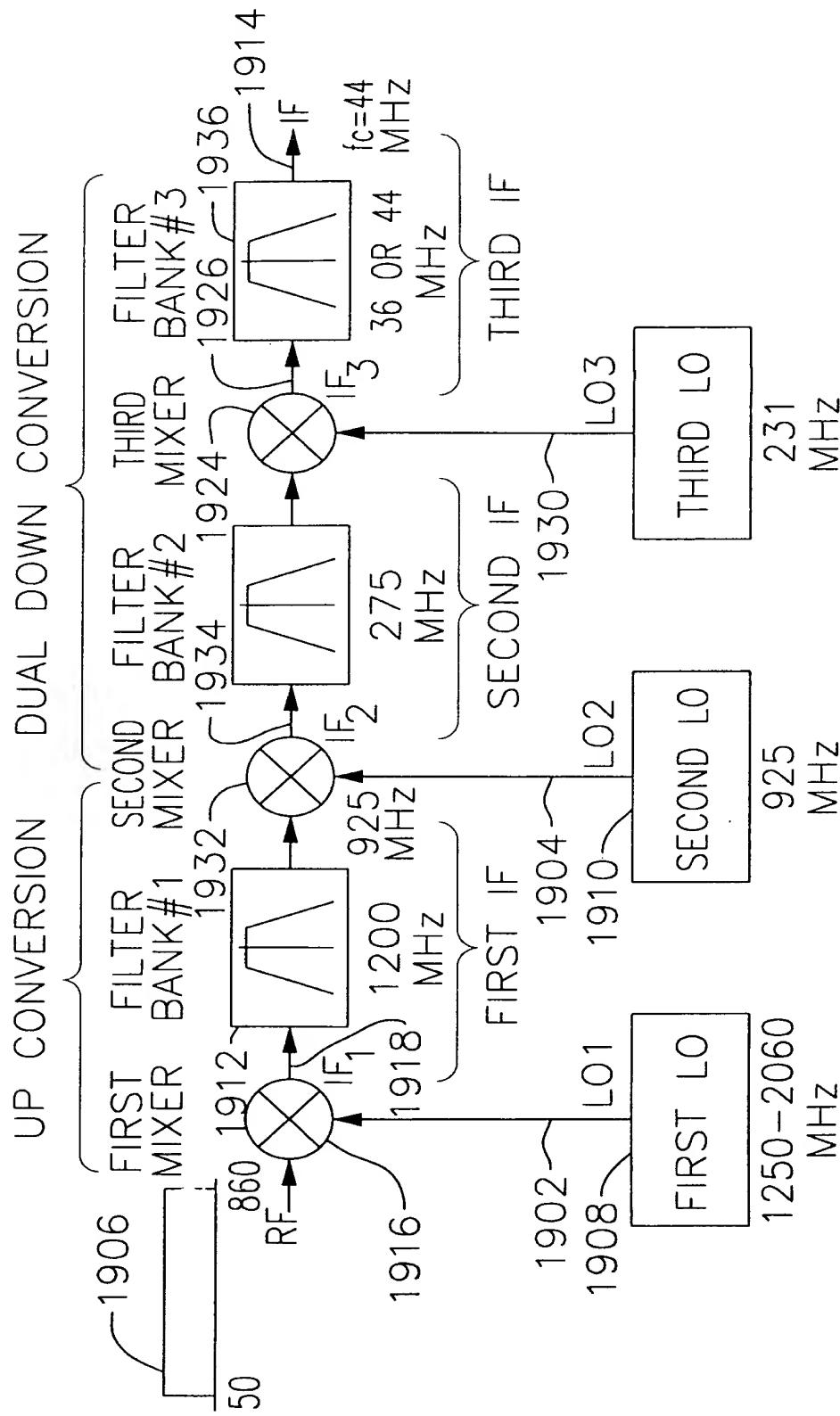




FIG. 20

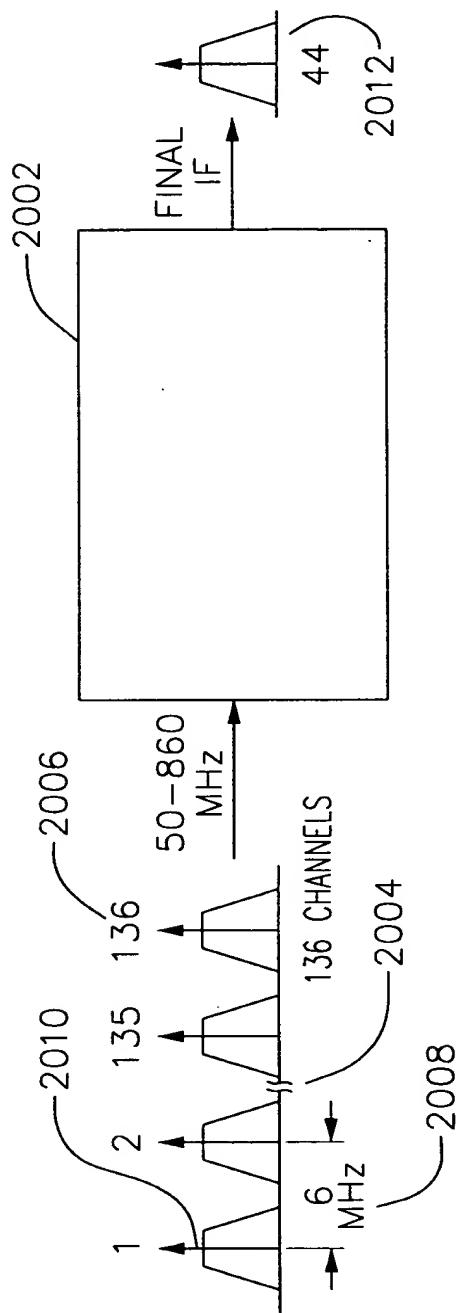




FIG. 21

PPL Xtal REFERENCE=10MHz  
 LO-1, 10MHz FREQUENCY STEPS  
 LO-2, 100kHz FREQUENCY STEPS  
 44MHz IF

TABLE OF FREQUENCIES BASED ON  
COARSE/FINE PLL SOLUTION:

NOTE  
 $\frac{LO-2}{LO-1}$  REF=100kHz,  
 SO DIVIDE RANGE=9216 TO 9280

<b>F<sub>f</sub> (MHz)</b>	50	56	62	68	74	80	86	92	98	104	110	116	122	128	"	854	860
<b>LO-1(MHz)</b>	1250	1260	1260	1270	1270	1280	1290	1290	1300	1300	1310	1320	1320	1330	"	2050	2060
<b>IF-1 (MHz)</b>	1200	1204	1198	1202	1196	1200	1204	1198	1202	1196	1200	1204	1198	1202	"	1196	1200
<b>LO-2(MHz)</b>	924.8	928.0	923.2	926.4	921.6	924.8	928.0	923.2	926.4	921.6	924.8	928.0	923.2	926.4	"	921.6	924.8
<b>IF-2(MHz)</b>	275.2	276.0	274.8	275.6	274.4	275.2	276.0	274.8	275.6	274.4	275.2	276.0	274.8	275.6	"	274.4	275.2
<b>LO-3(MHz)</b>	231.2	232	230.8	232	230	231	232	231	232	230	231	232	231	232	"	230	231
<b>IF-3(MHz)</b>	44.0	44.0	44.0	44.0	44.0	44.0	44.0	44.0	44.0	44.0	44.0	44.0	44.0	44.0	"	44.0	44.0

2102

FIG. 22

PPL Xtal REFERENCE=10MHz  
 LO-1, 10MHz FREQUENCY STEPS  
 LO-2, 100kHz FREQUENCY STEPS  
 36MHz IF

TABLE OF FREQUENCIES BASED ON  
 COARSE/FINE PLL SOLUTION:

NOTE  
 •  $\frac{LO-2}{REF} = 100\text{kHz}$ ,  
 SO DIVIDE RANGE = 9280 TO 9340

Fr <sub>f</sub> (MHz)	50	58	66	74	82	90	98	106	114	122	130	138	146	154	"	852	860
LO-1(MHz)	1250	1260	1270	1270	1280	1290	1300	1310	1310	1320	1330	1340	1350	1350	"	2050	2060
IF-1 (MHz)	1200	1202	1204	1196	1198	1200	1202	1204	1196	1198	1200	1202	1204	1196	"	1198	1200
LO-2(MHz)	931.2	932.8	934.4	928.0	930	931	933	934	928.0	930	931	933	934	928.0	"	929.60	931.2
IF-2(MHz)	268.8	269.2	269.6	268.0	268.4	268.8	269.2	269.6	268.0	268.4	268.8	269.2	269.6	268.0	"	268.4	268.8
LO-3(MHz)	232.8	233.2	233.6	232	232	233	233	234	232	232	233	233	234	232.0	"	232.4	232.8
IF-3(MHz)	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	"	36.0	36.0





FIG. 23

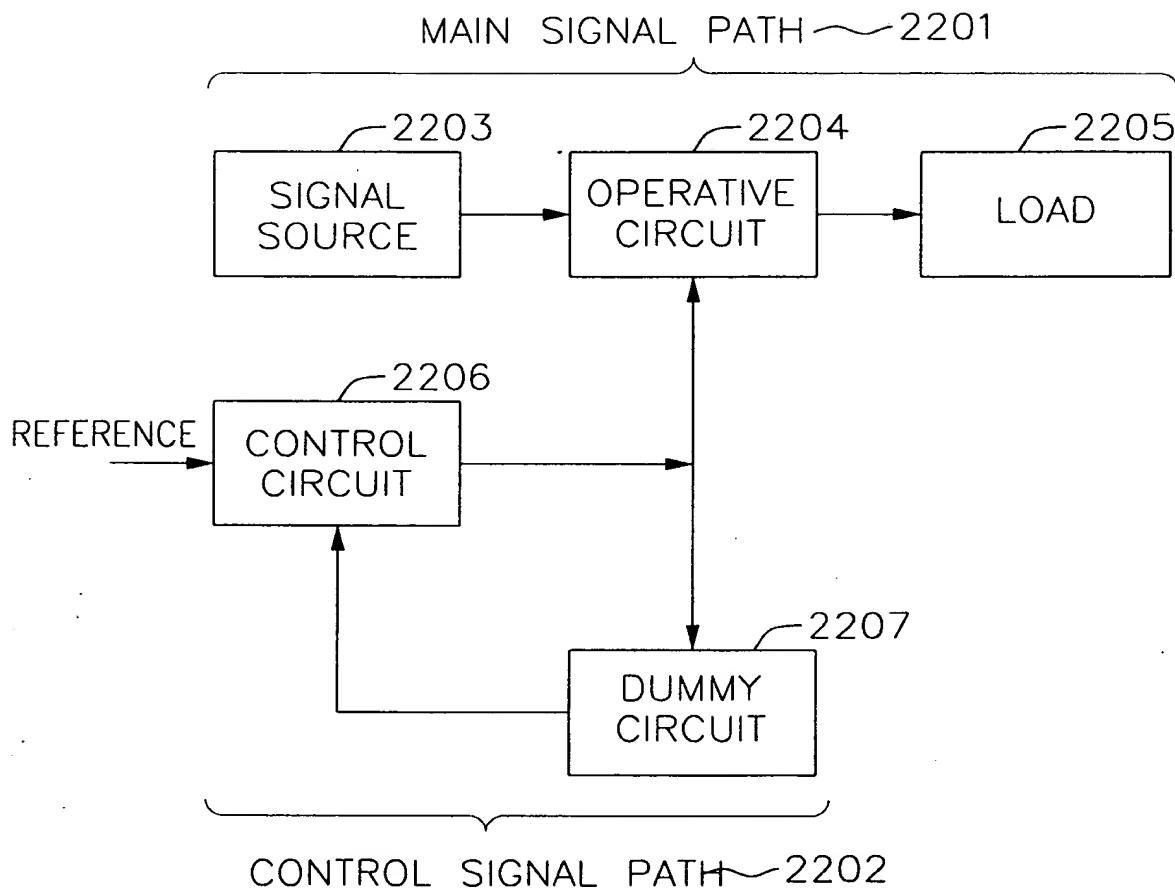




FIG. 24a

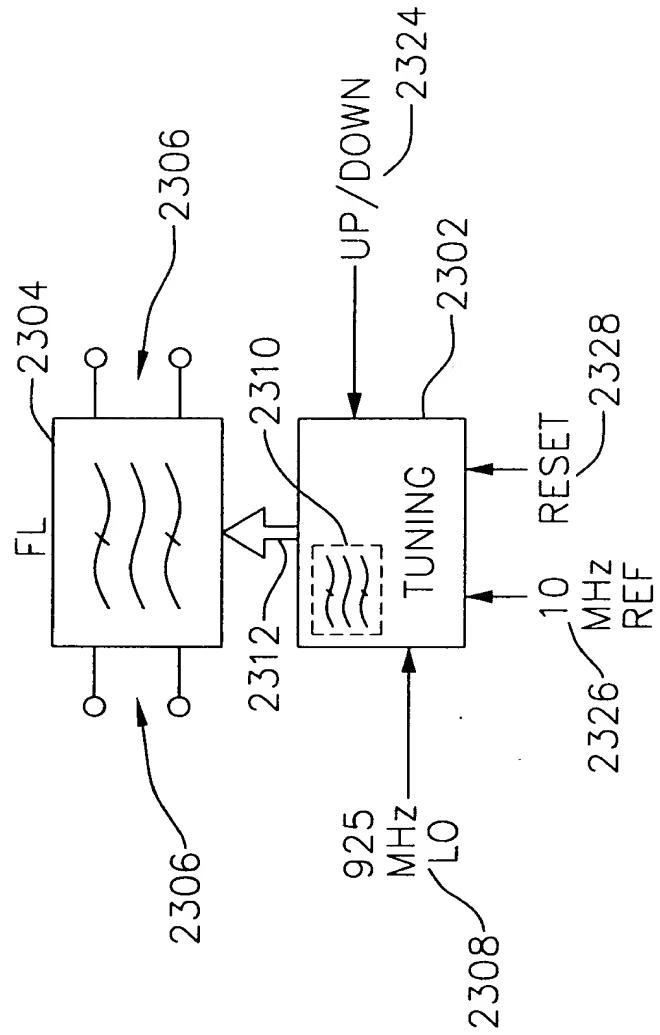




FIG. 24b

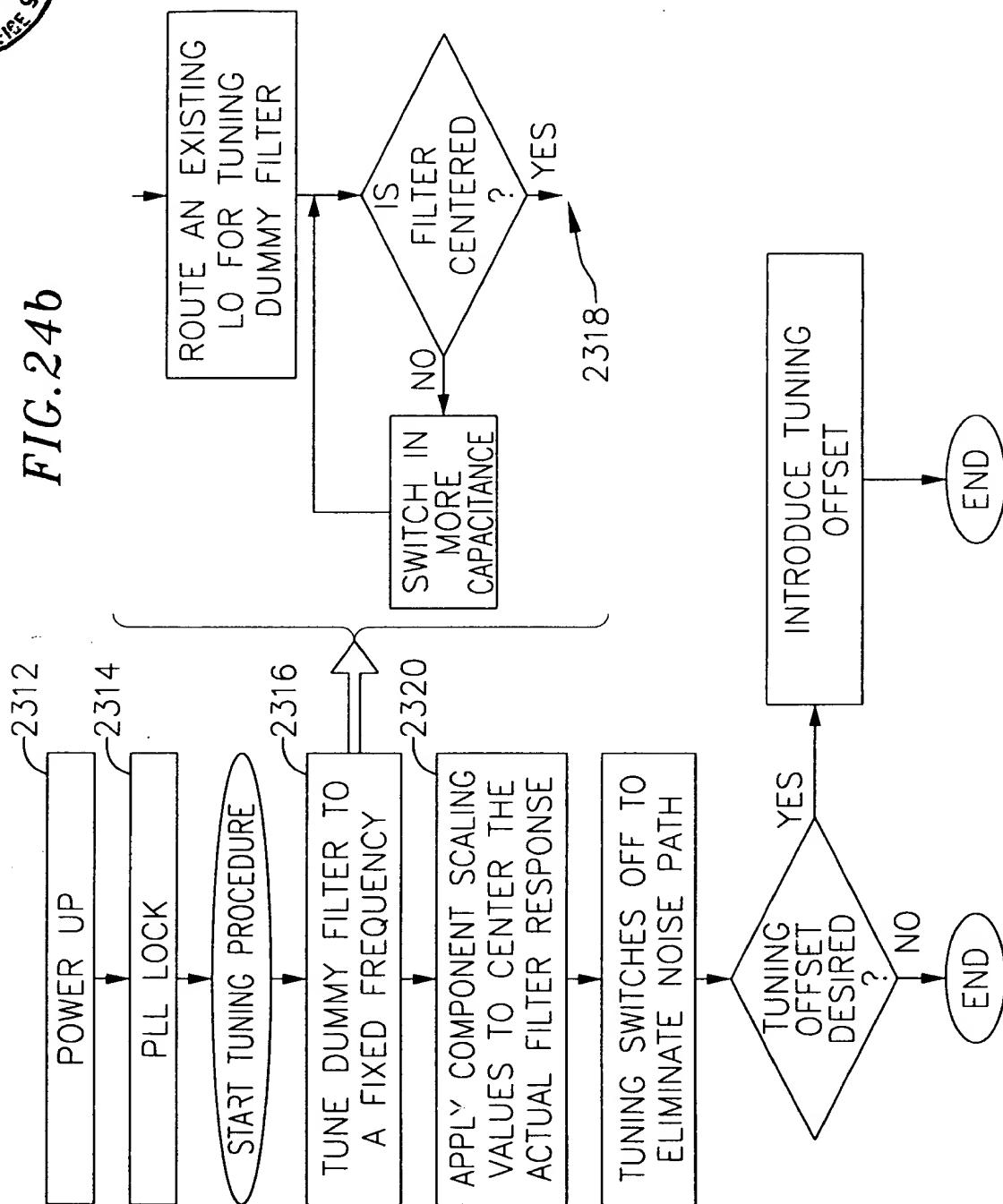




FIG. 24C

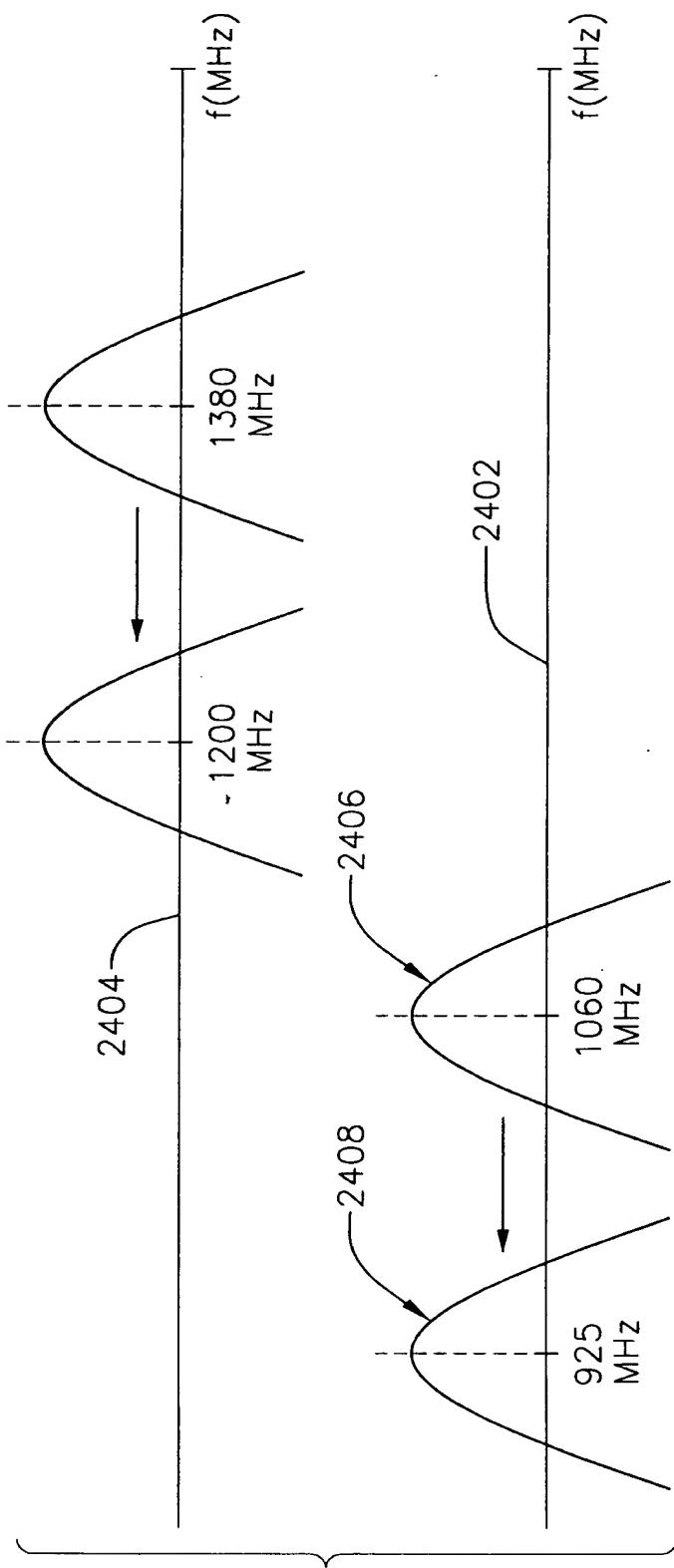




FIG. 25

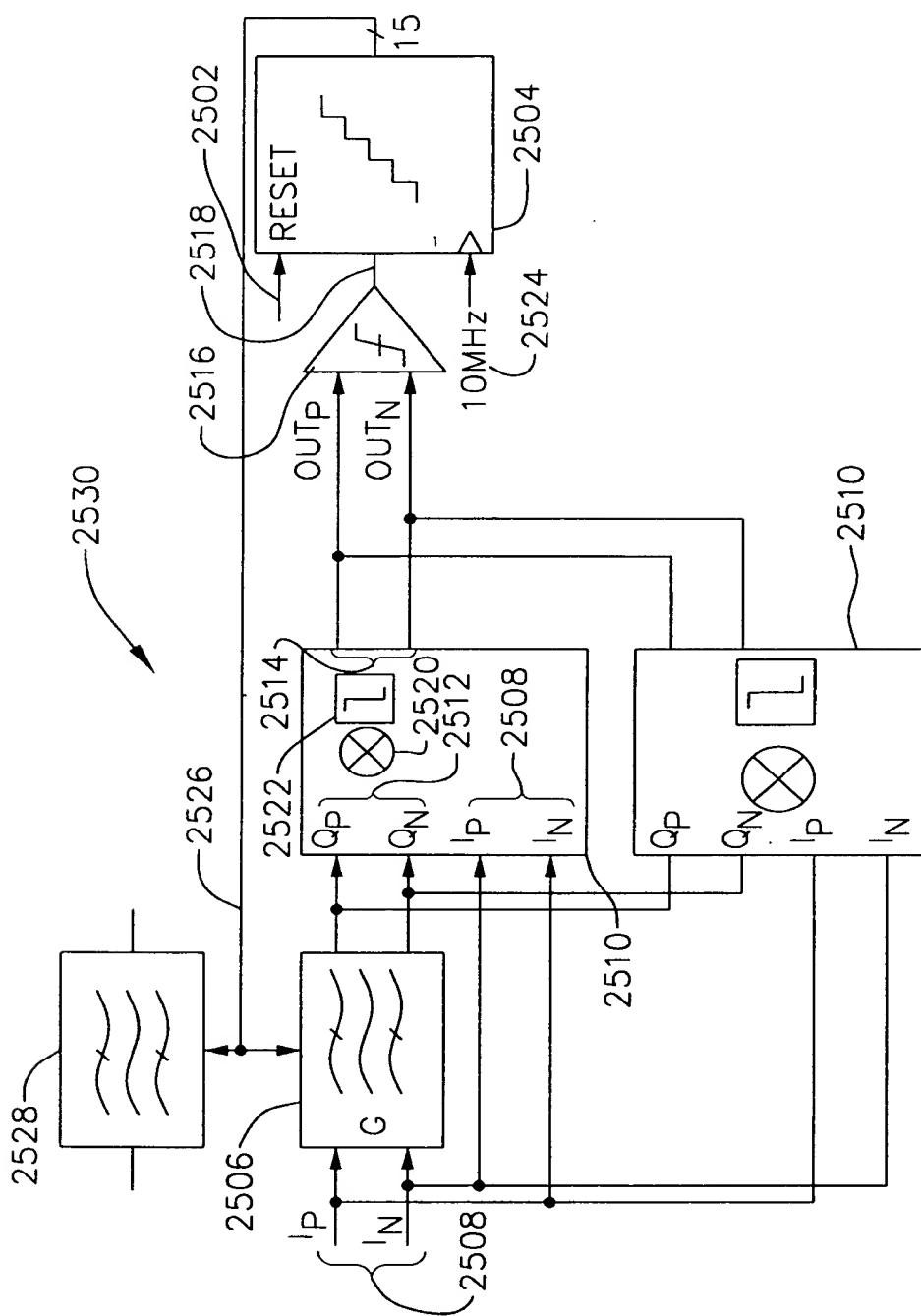
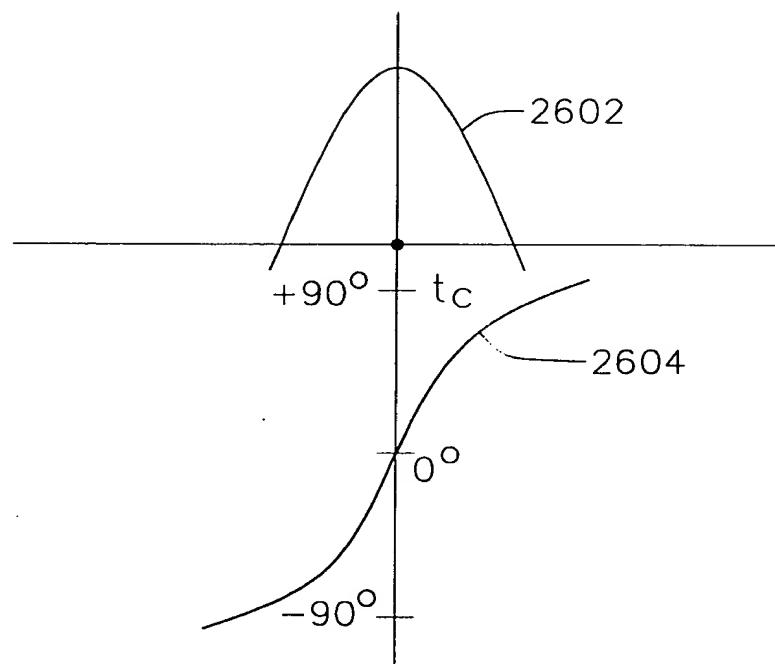
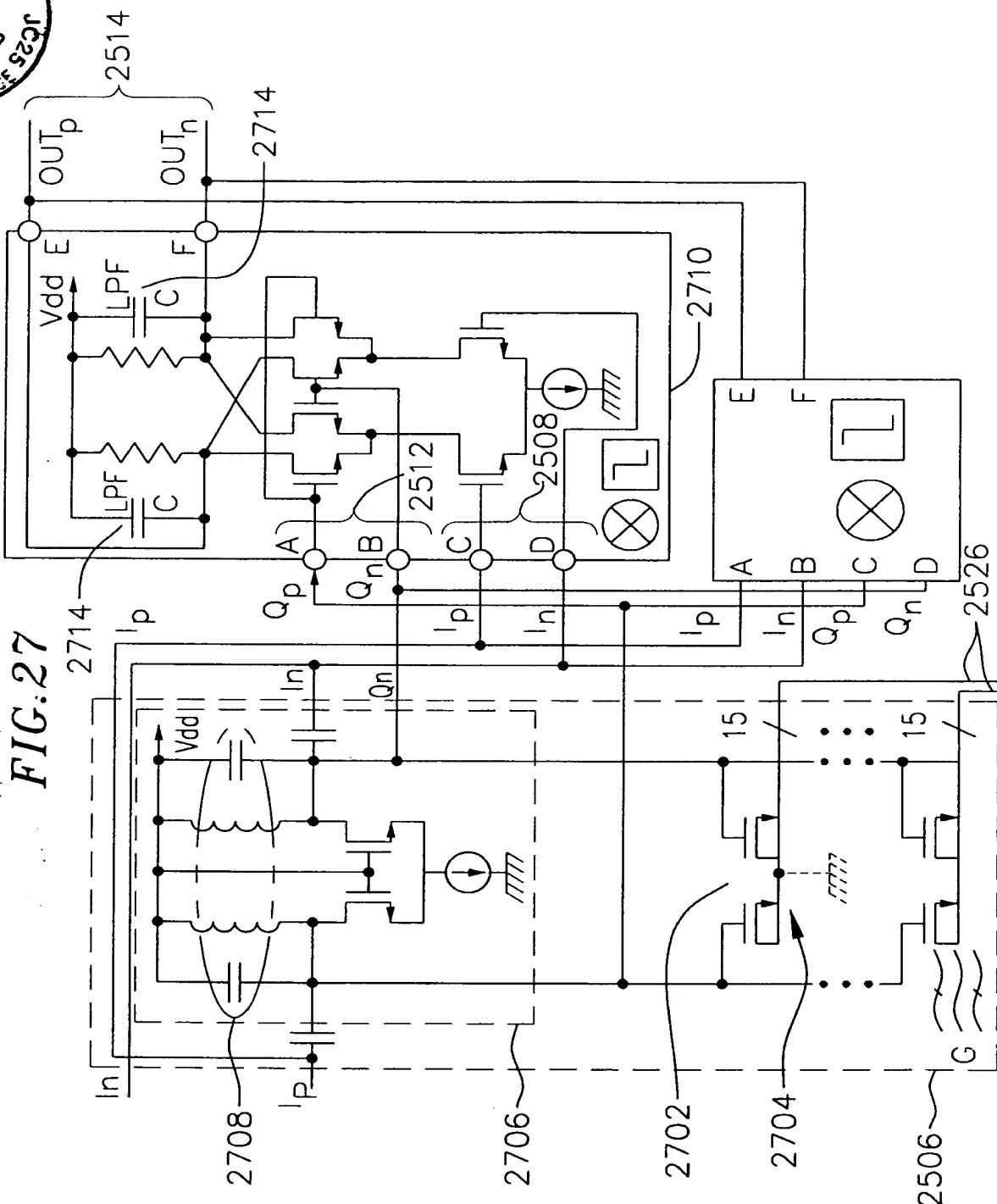


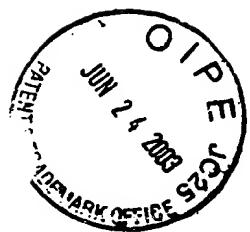


FIG. 26





Appl. No. 09/438,689; Filed: November 12, 1999  
Dkt. No. 1875.095000C; Group Art Unit: 2817  
Inventors: Ward *et al.*; Tel: 202/371-2600  
Title: Differential Crystal Oscillator



*FIG. 28*

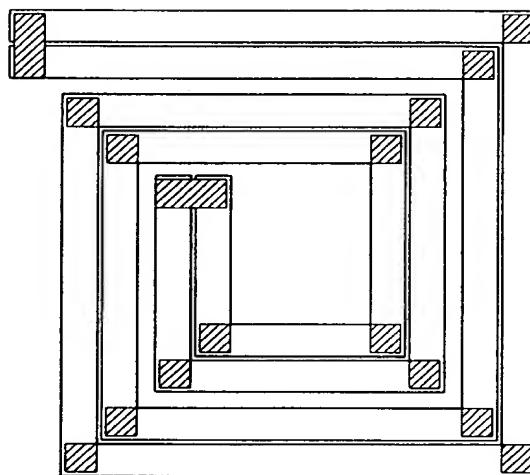




FIG. 29

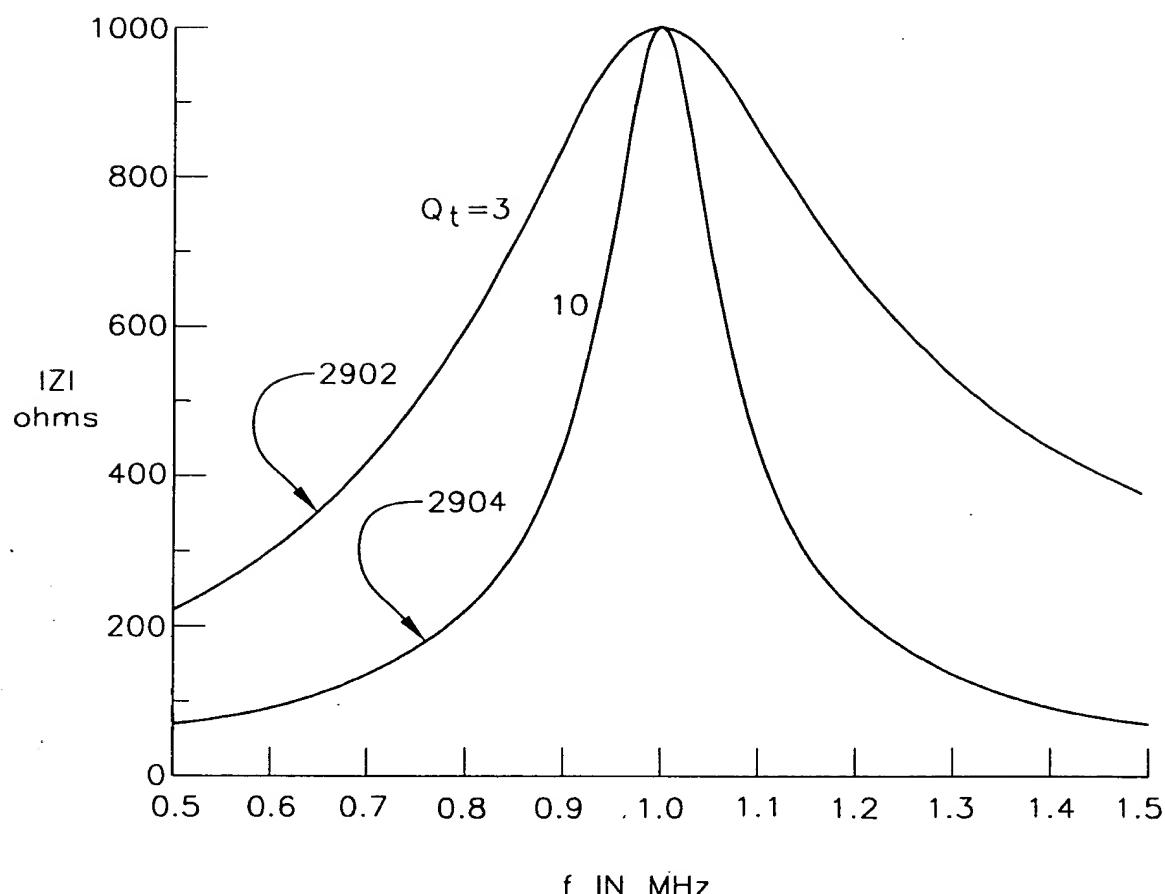




FIG. 30

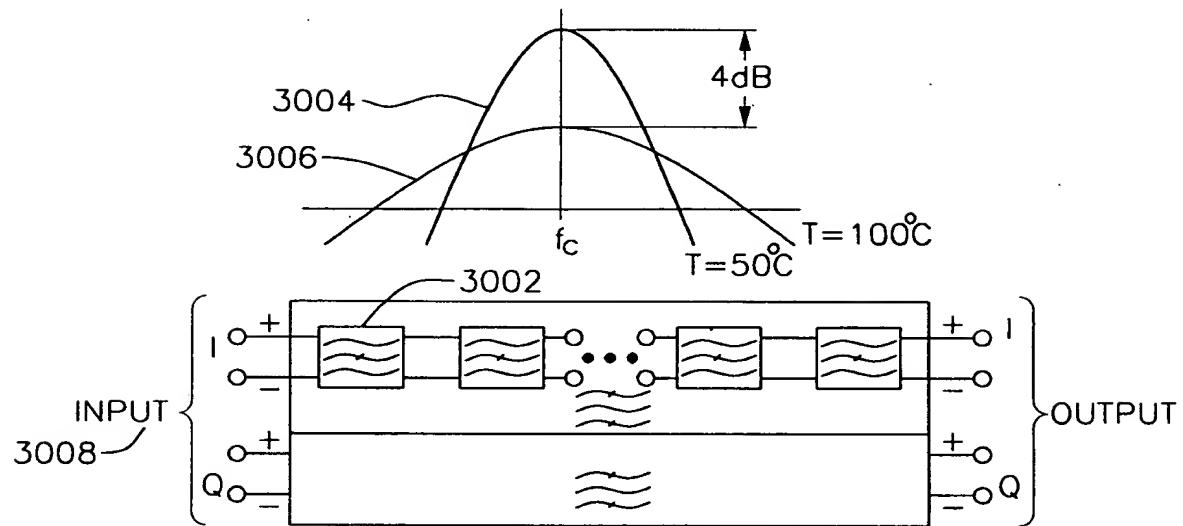


FIG. 31

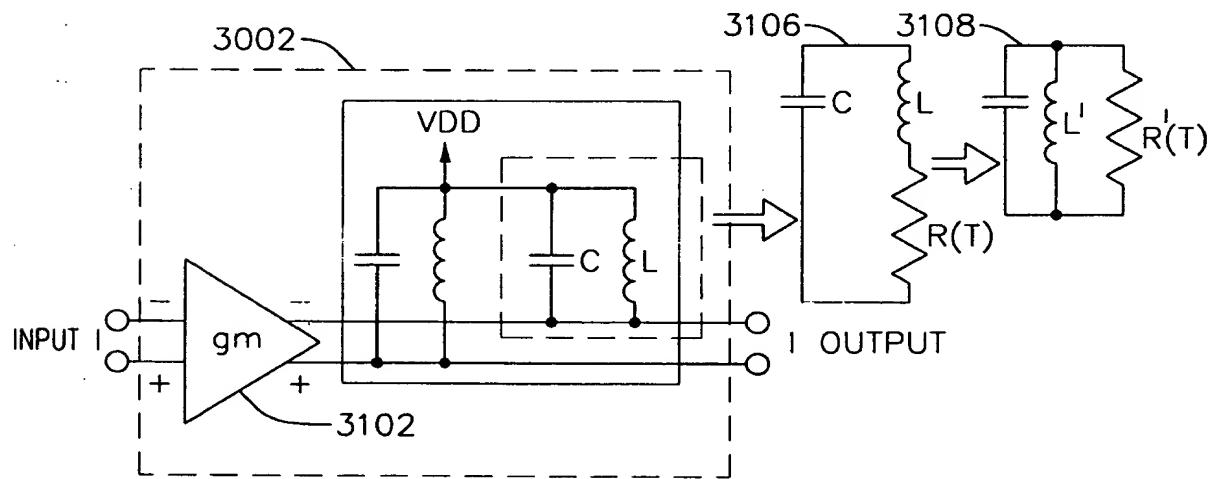




FIG. 32

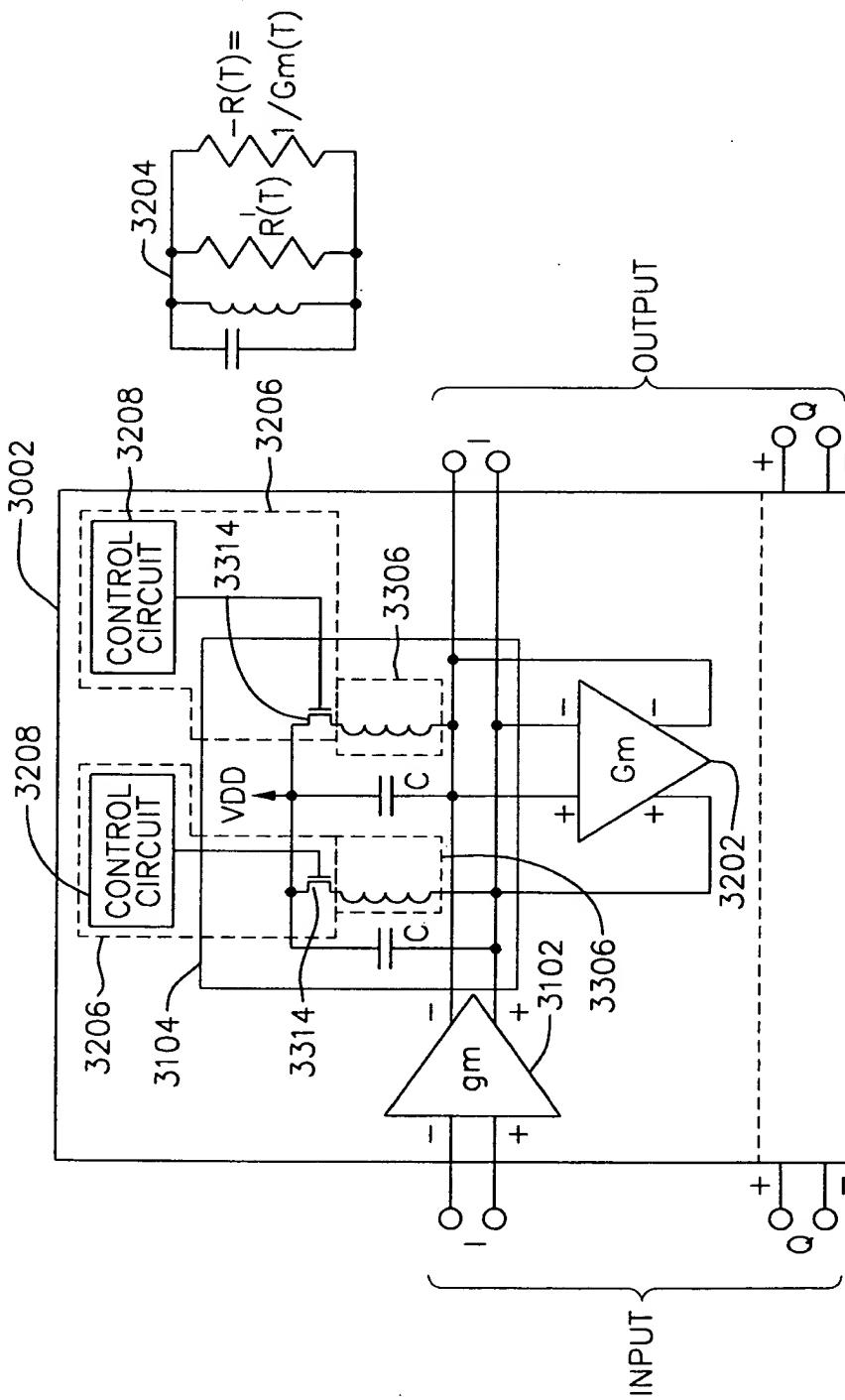
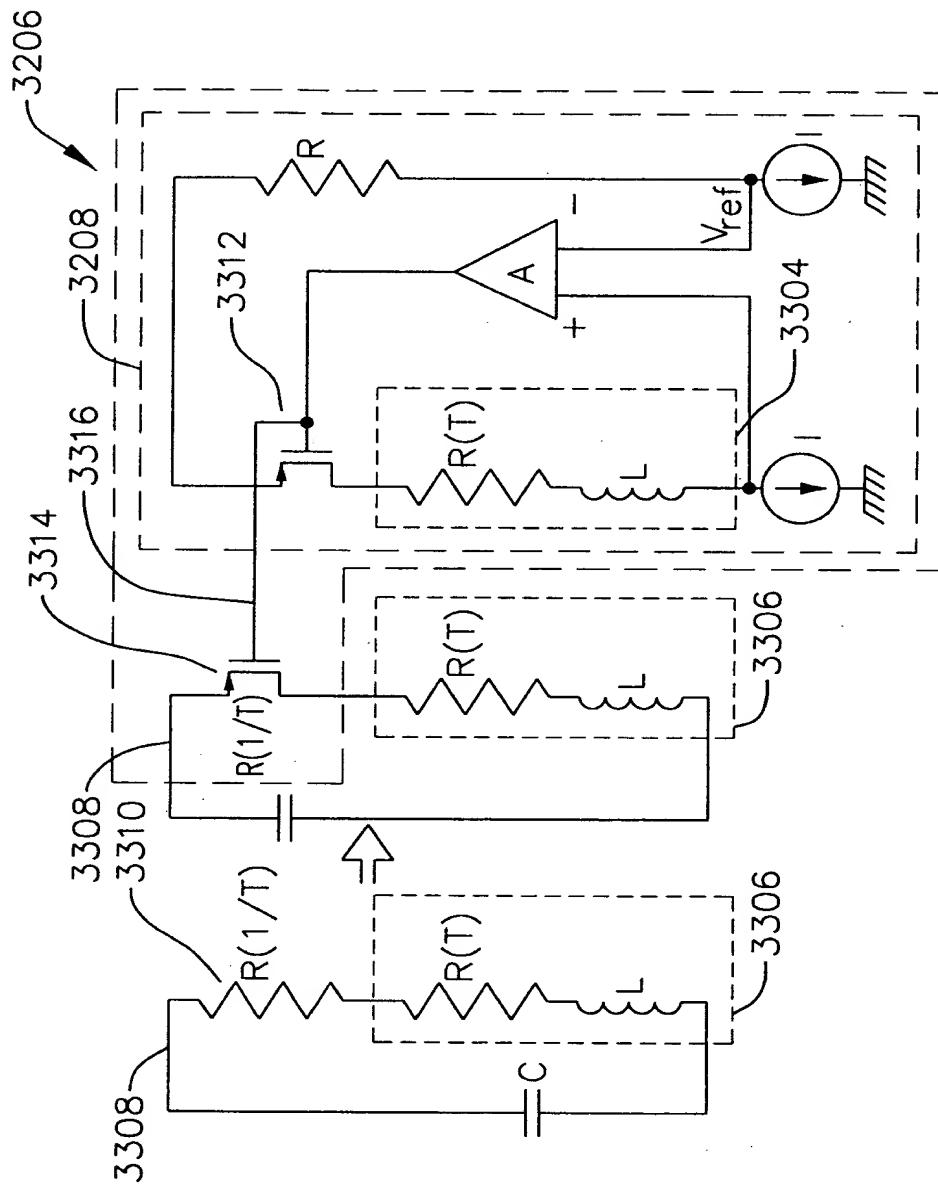




FIG. 33



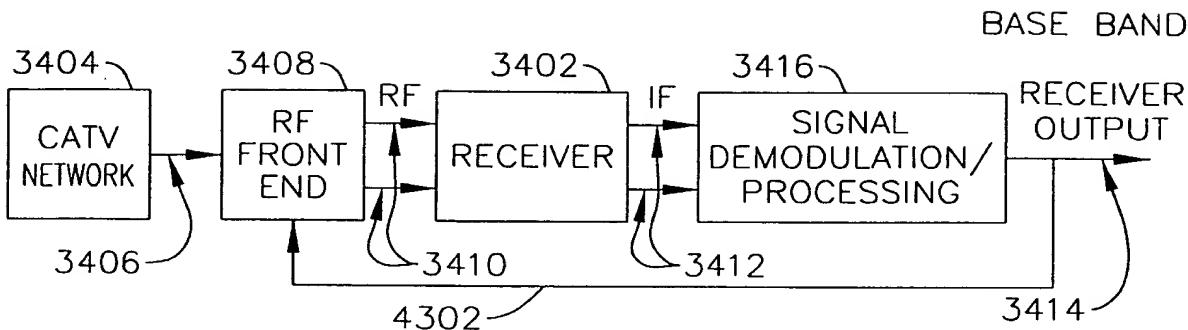
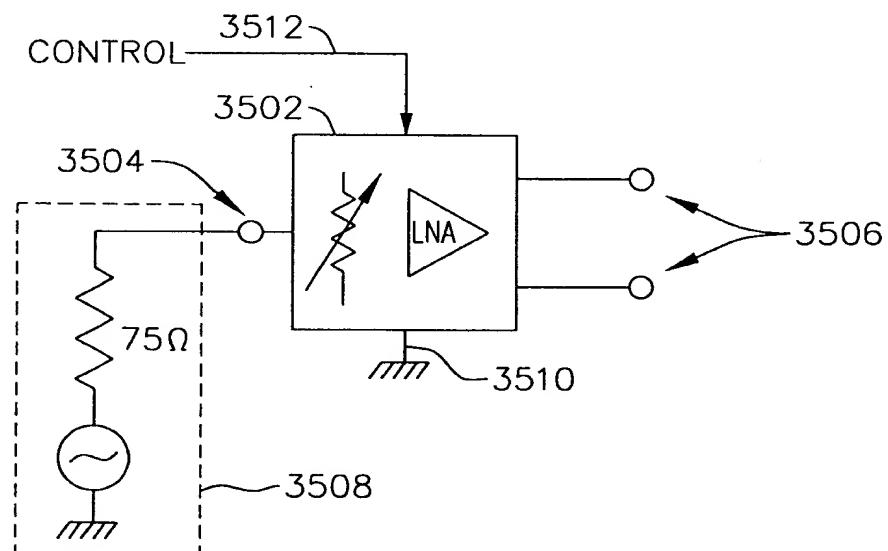
**FIG.34****FIG.35**



FIG. 36

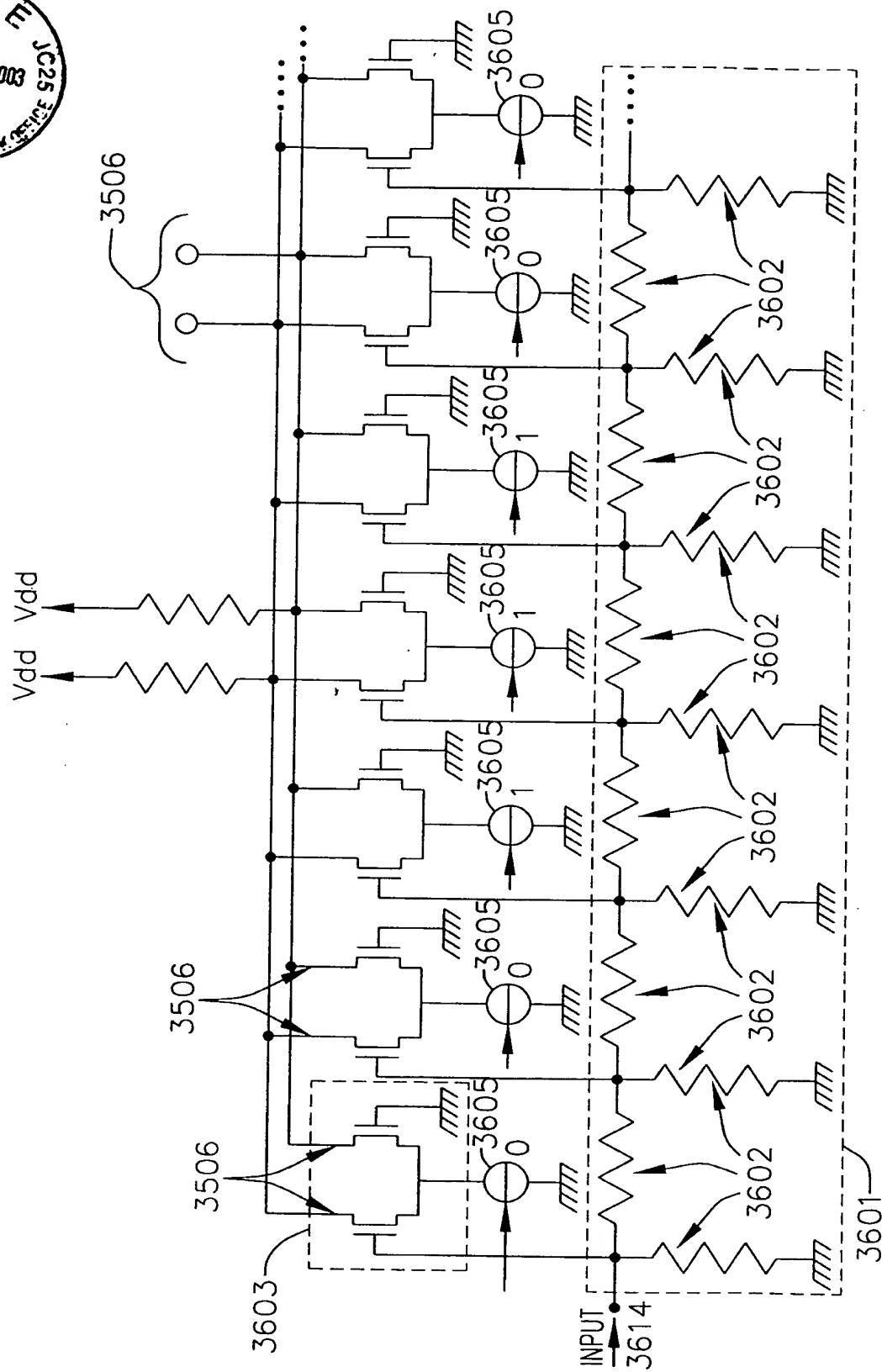




FIG. 37

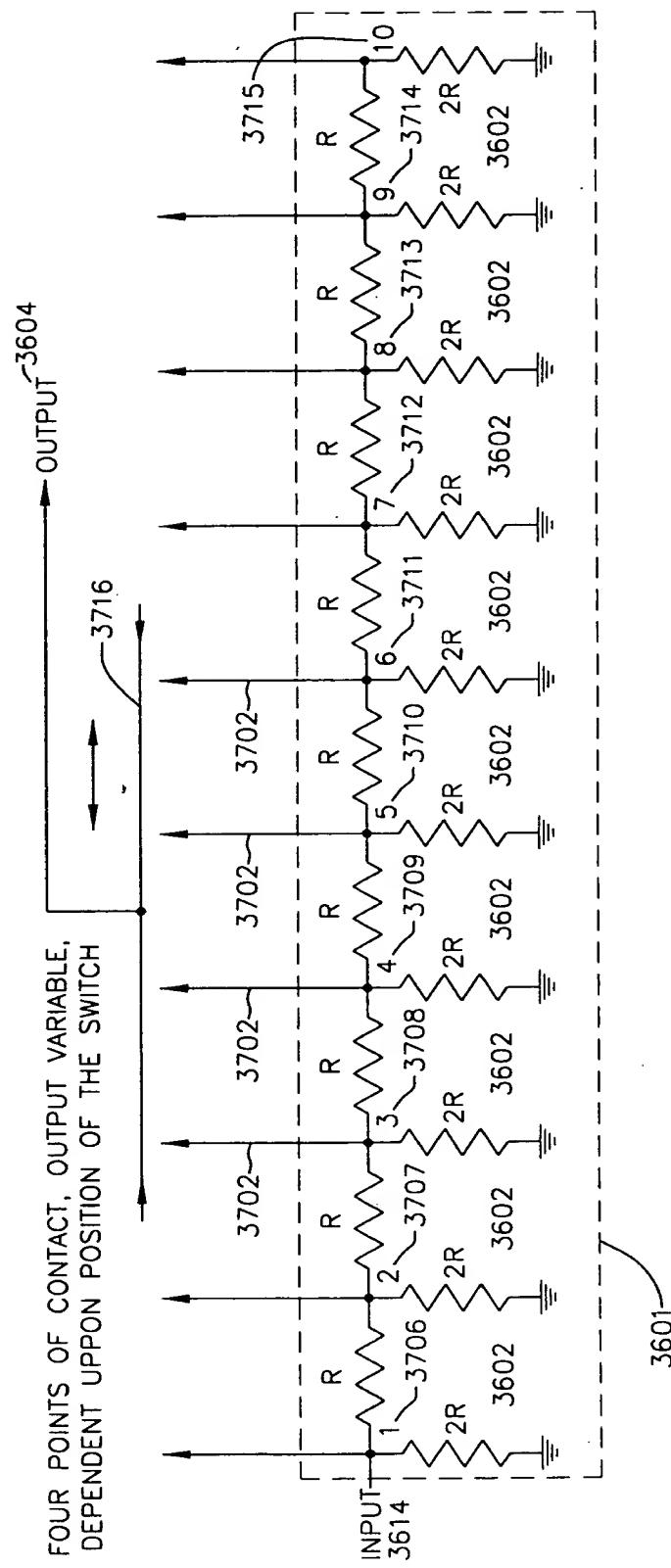




FIG. 38

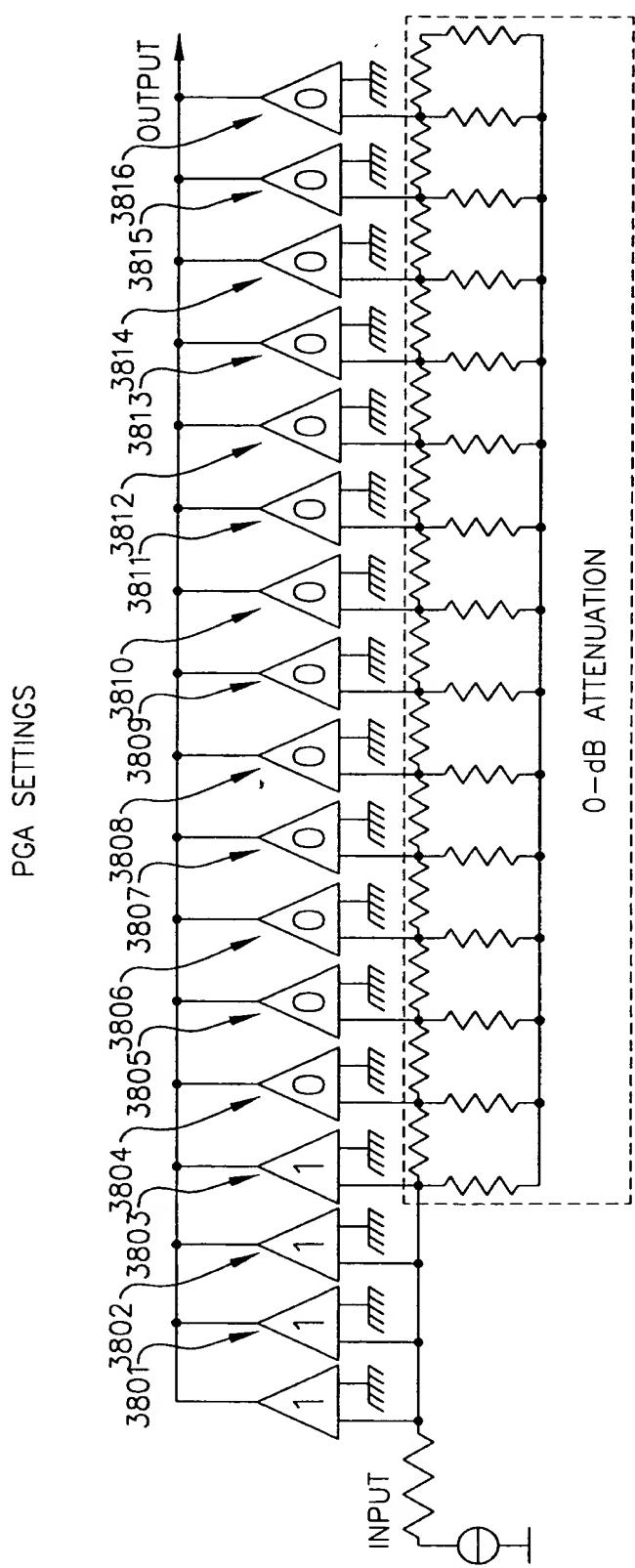




FIG. 39

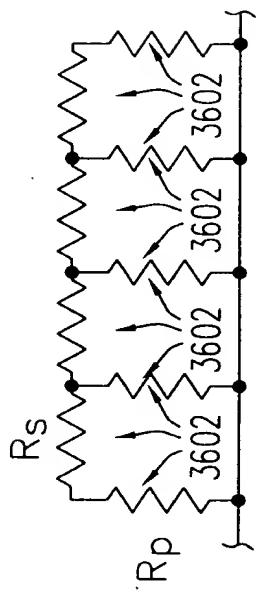
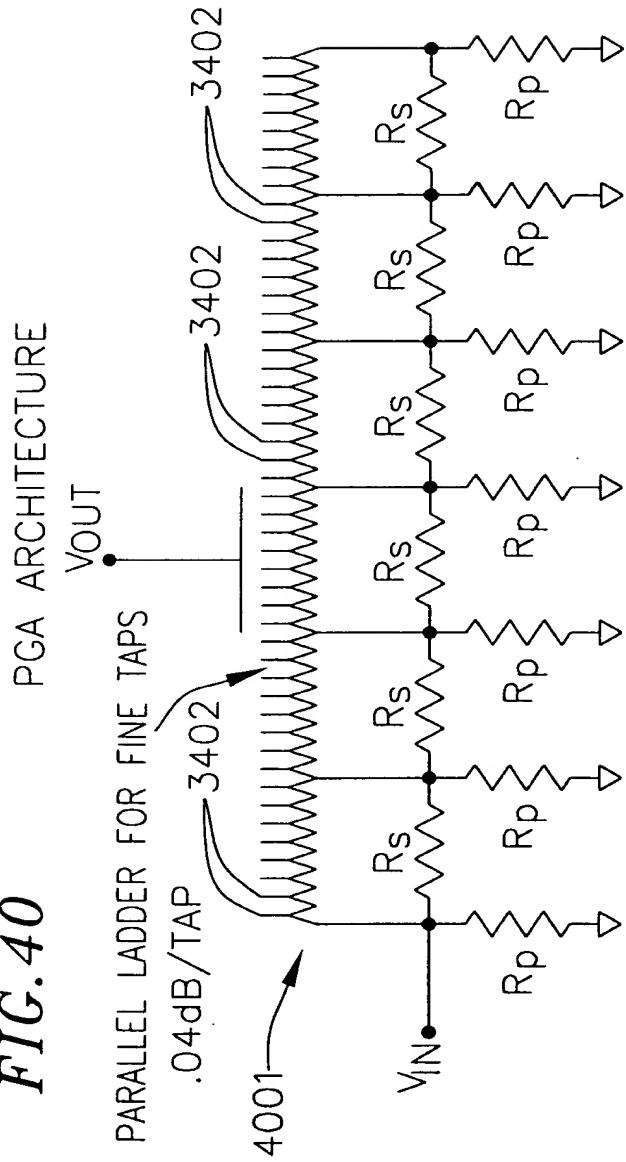


FIG. 40



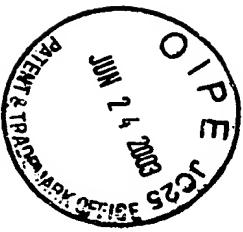
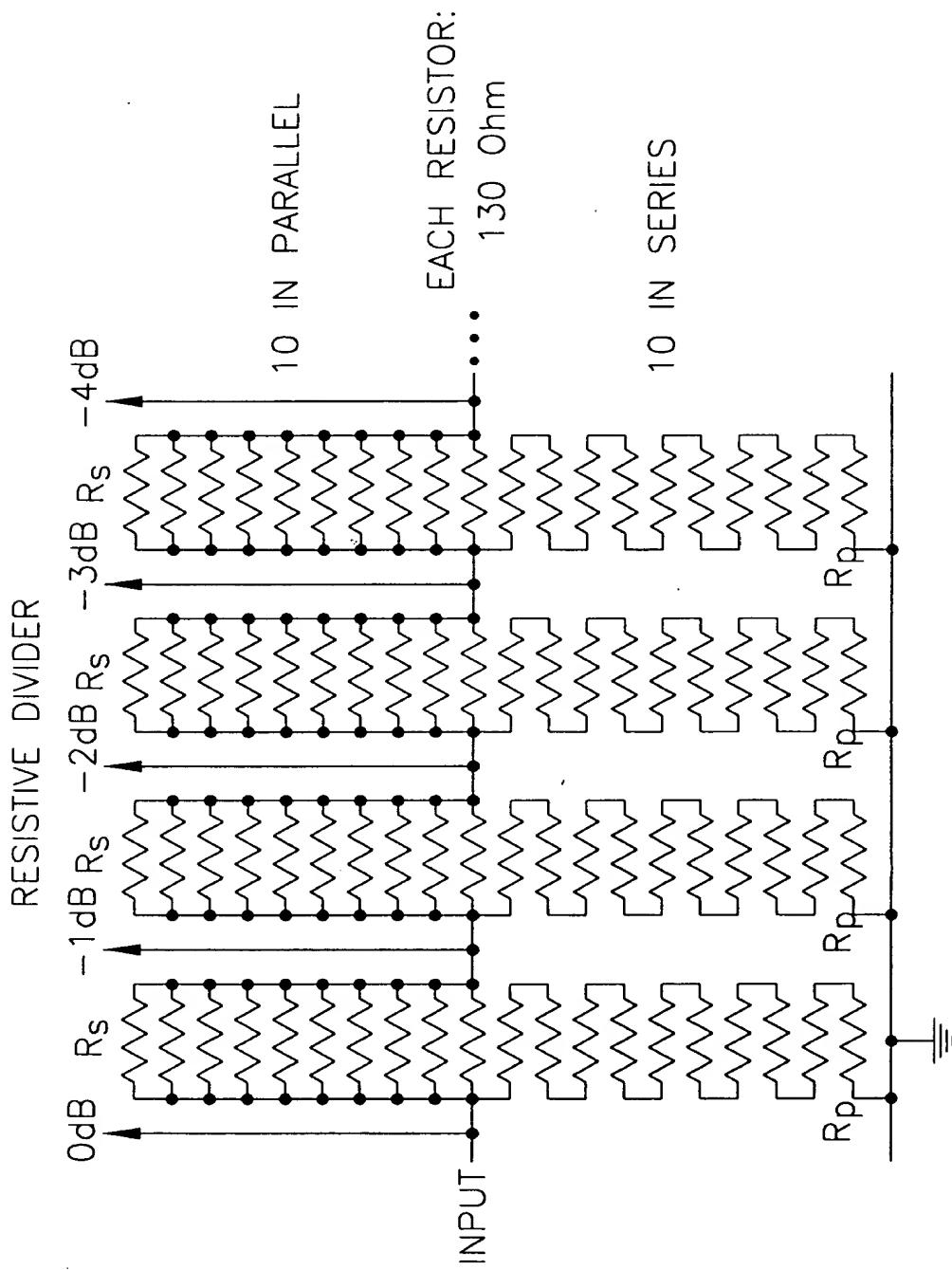
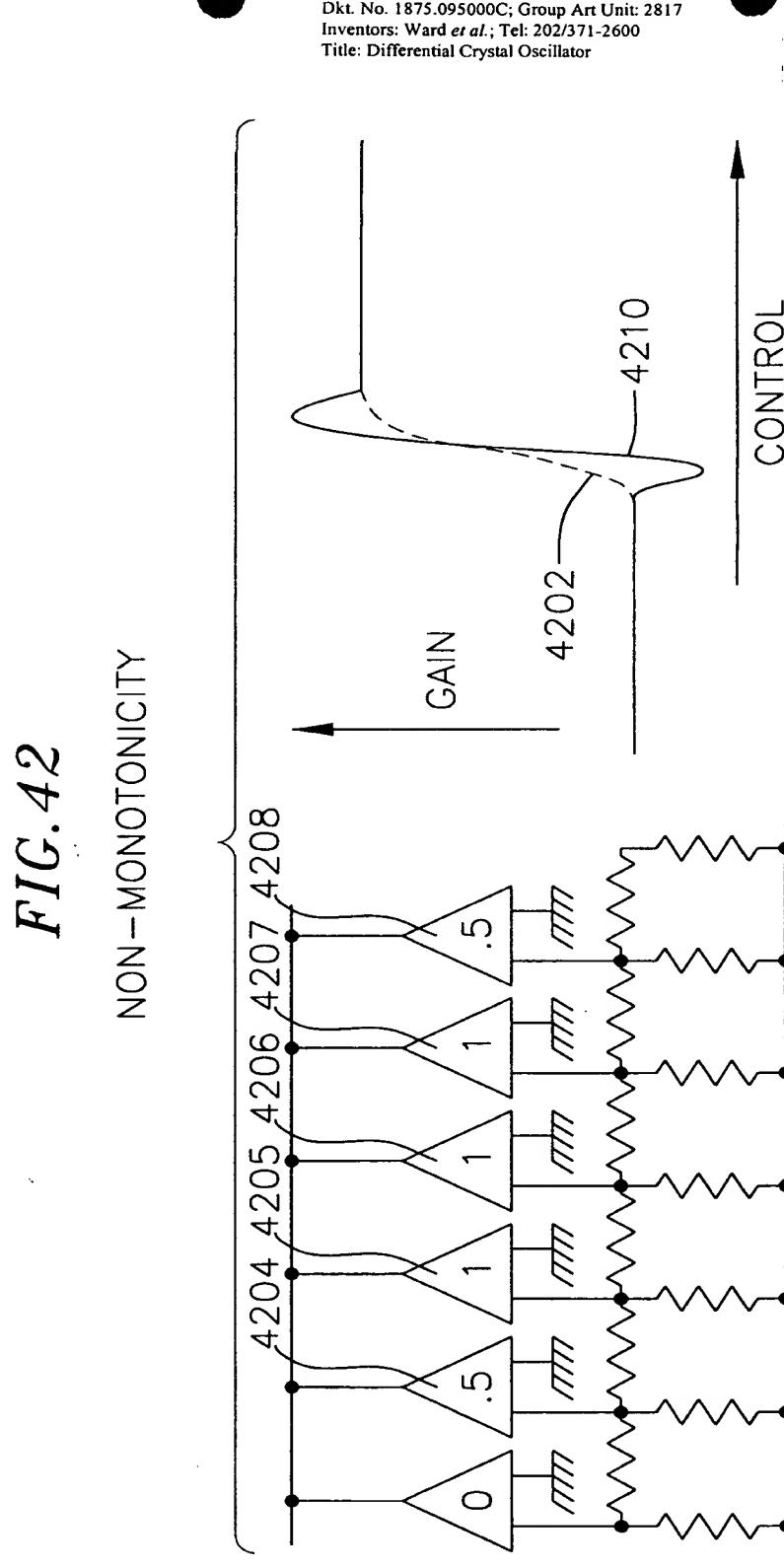


FIG. 41

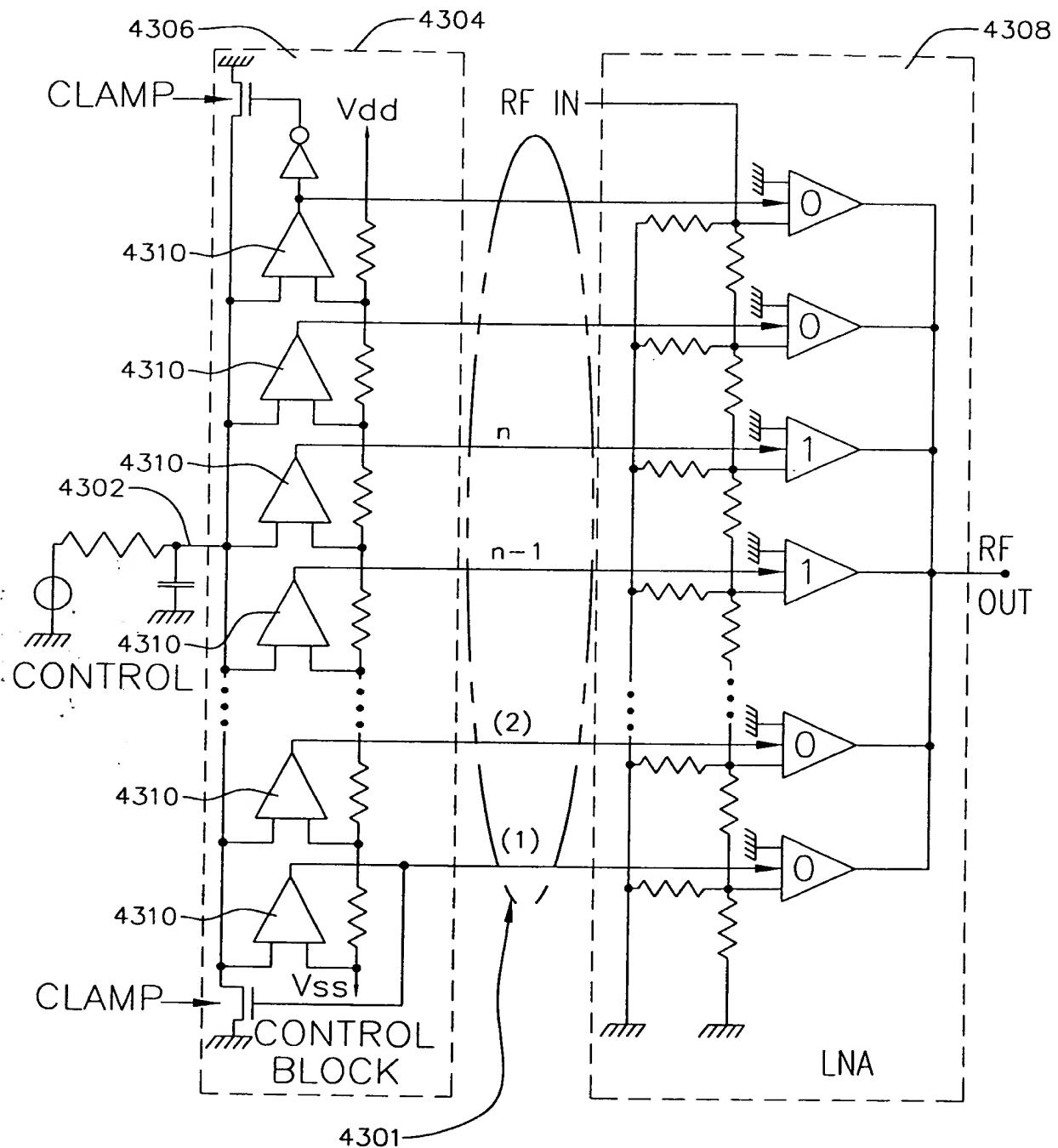






# FIG. 43

## CLAMPING CONTROL RANGE





**FIG. 44a**  
 CONTROLLED-GAIN COMPARATOR

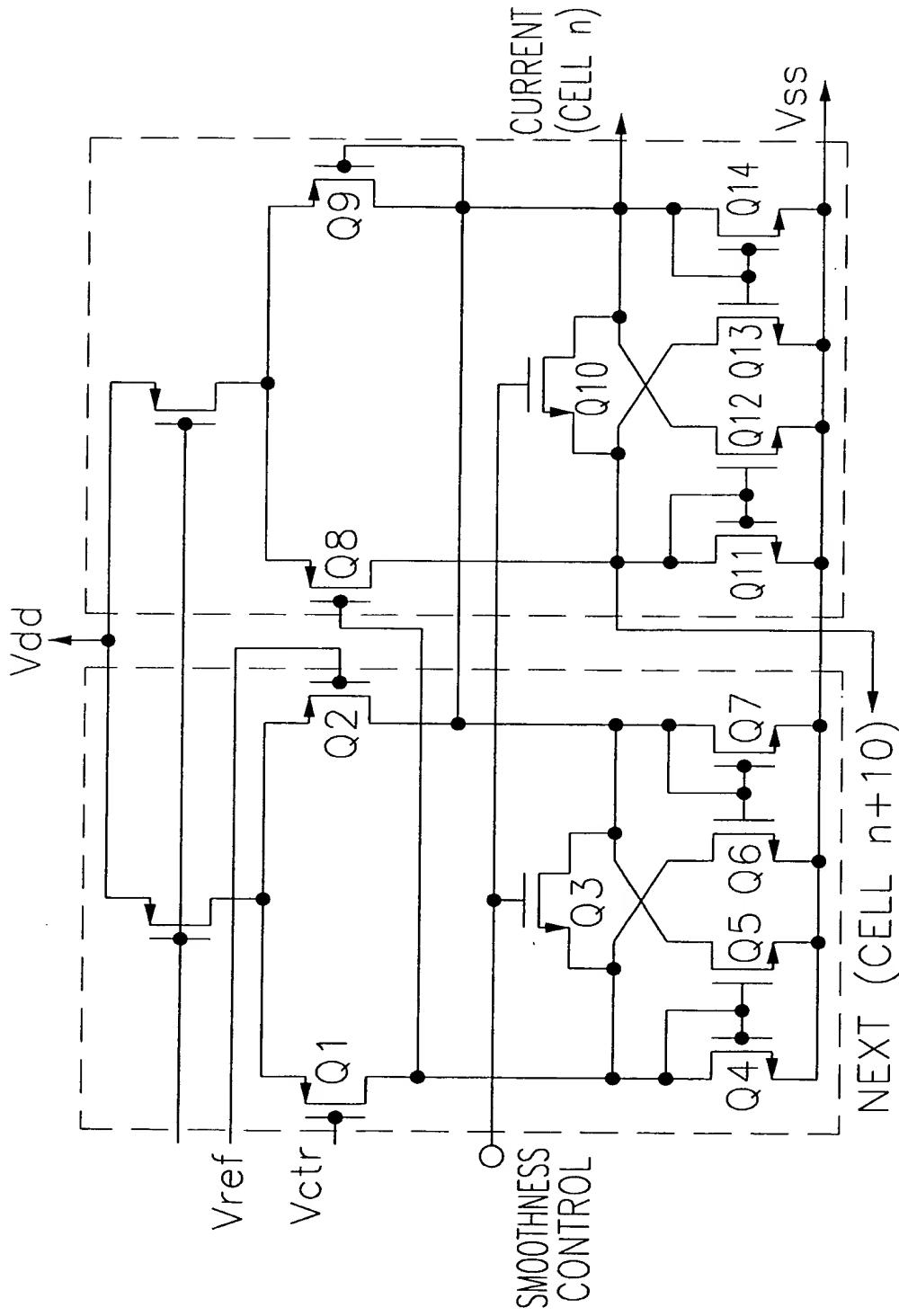




FIG. 44b

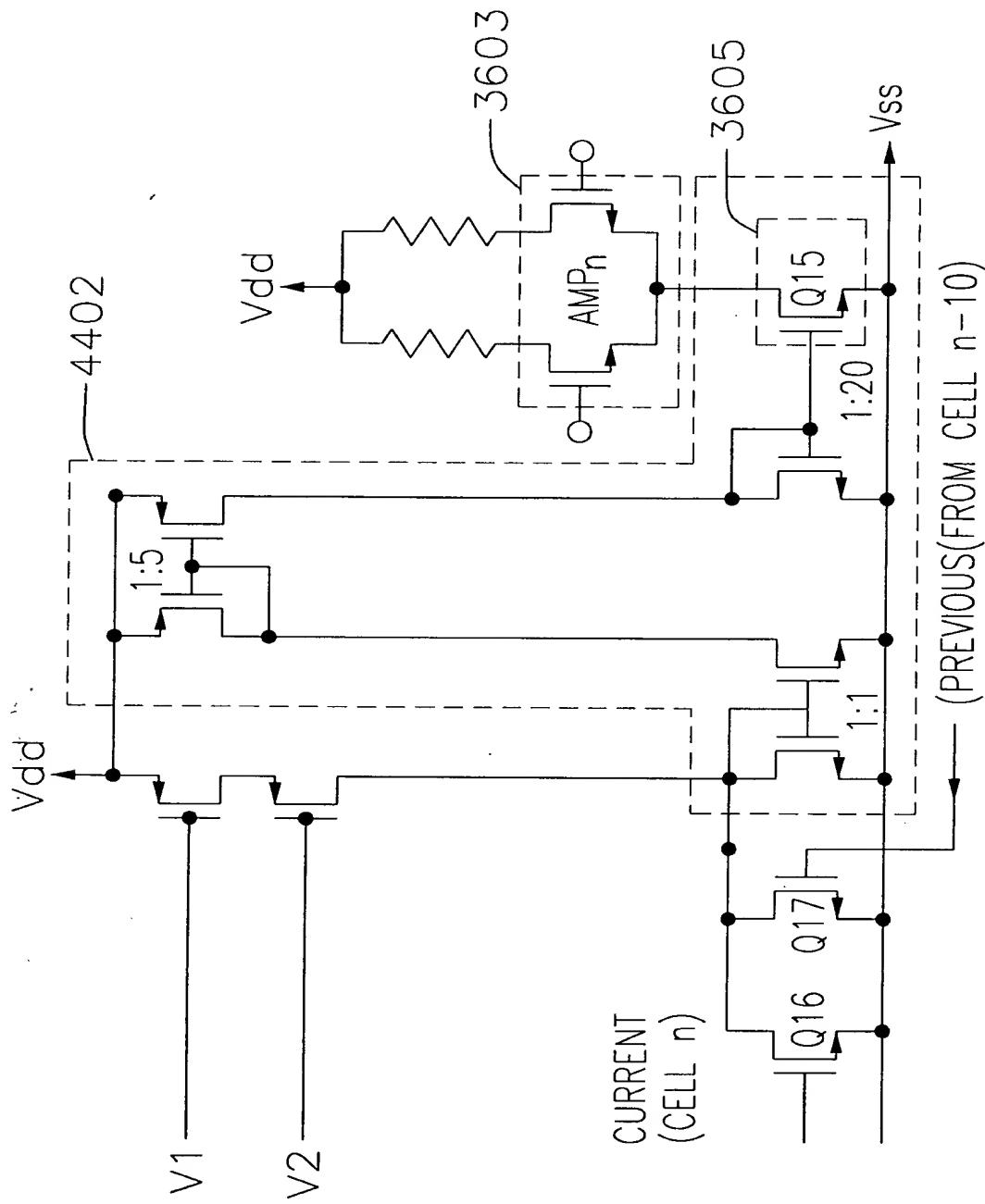
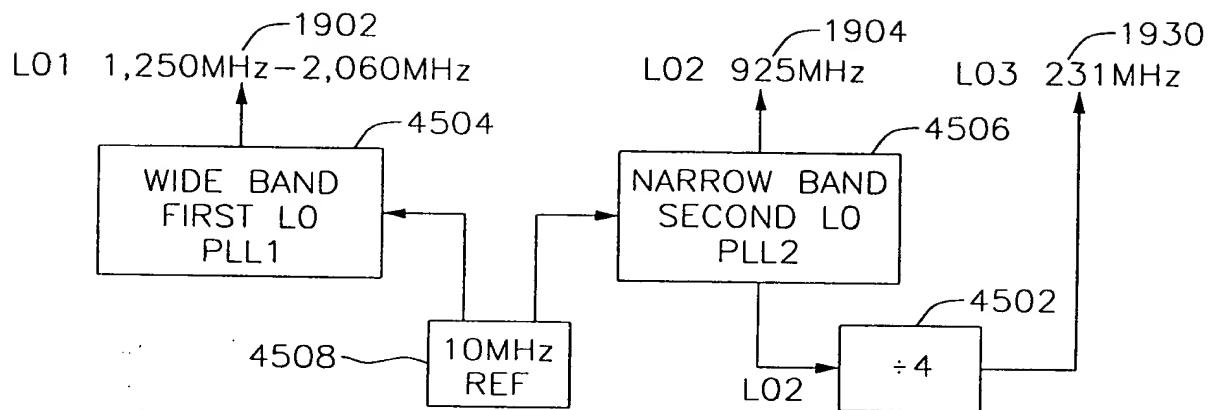




FIG. 45



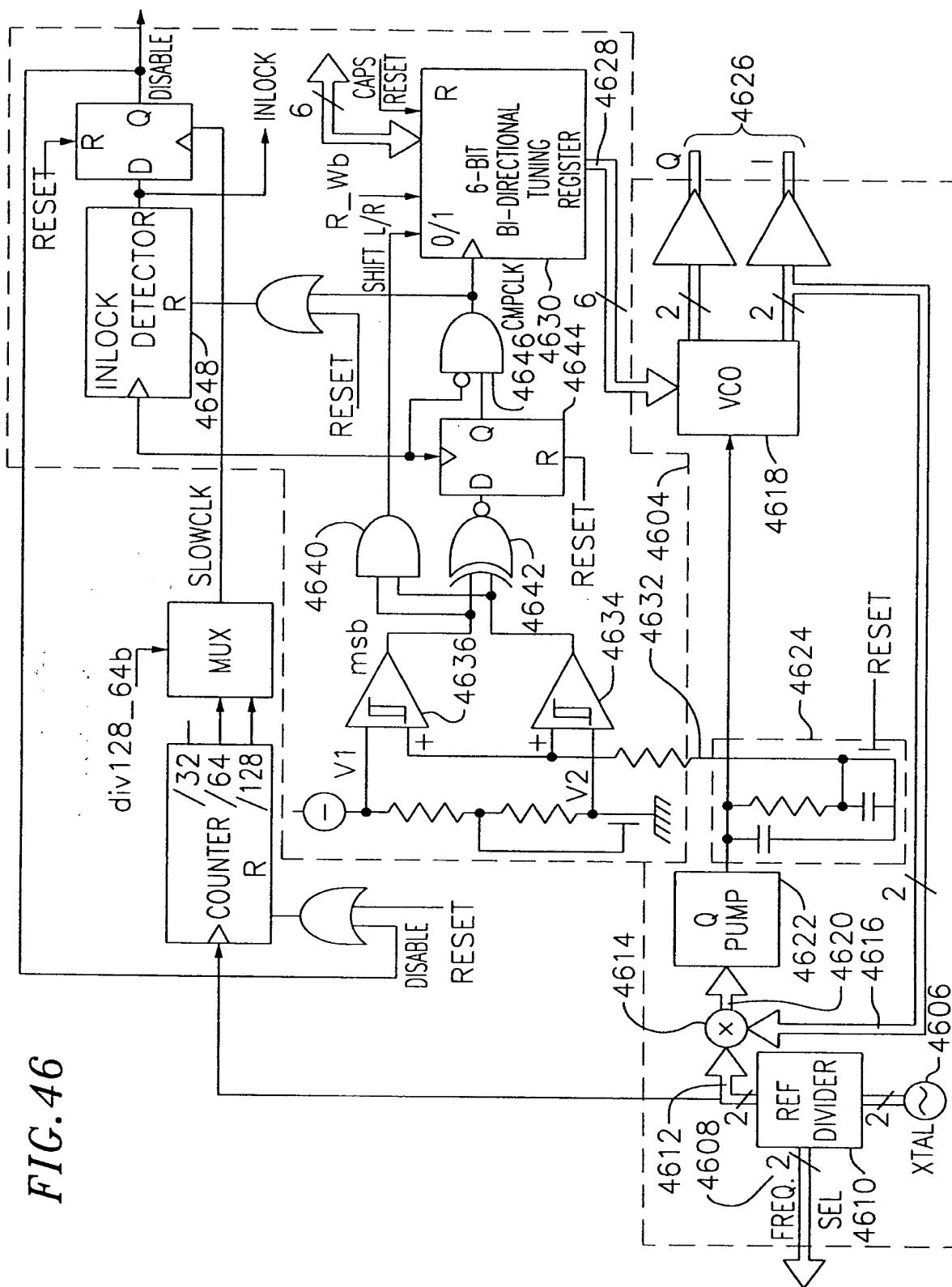


FIG. 46



FIG. 47

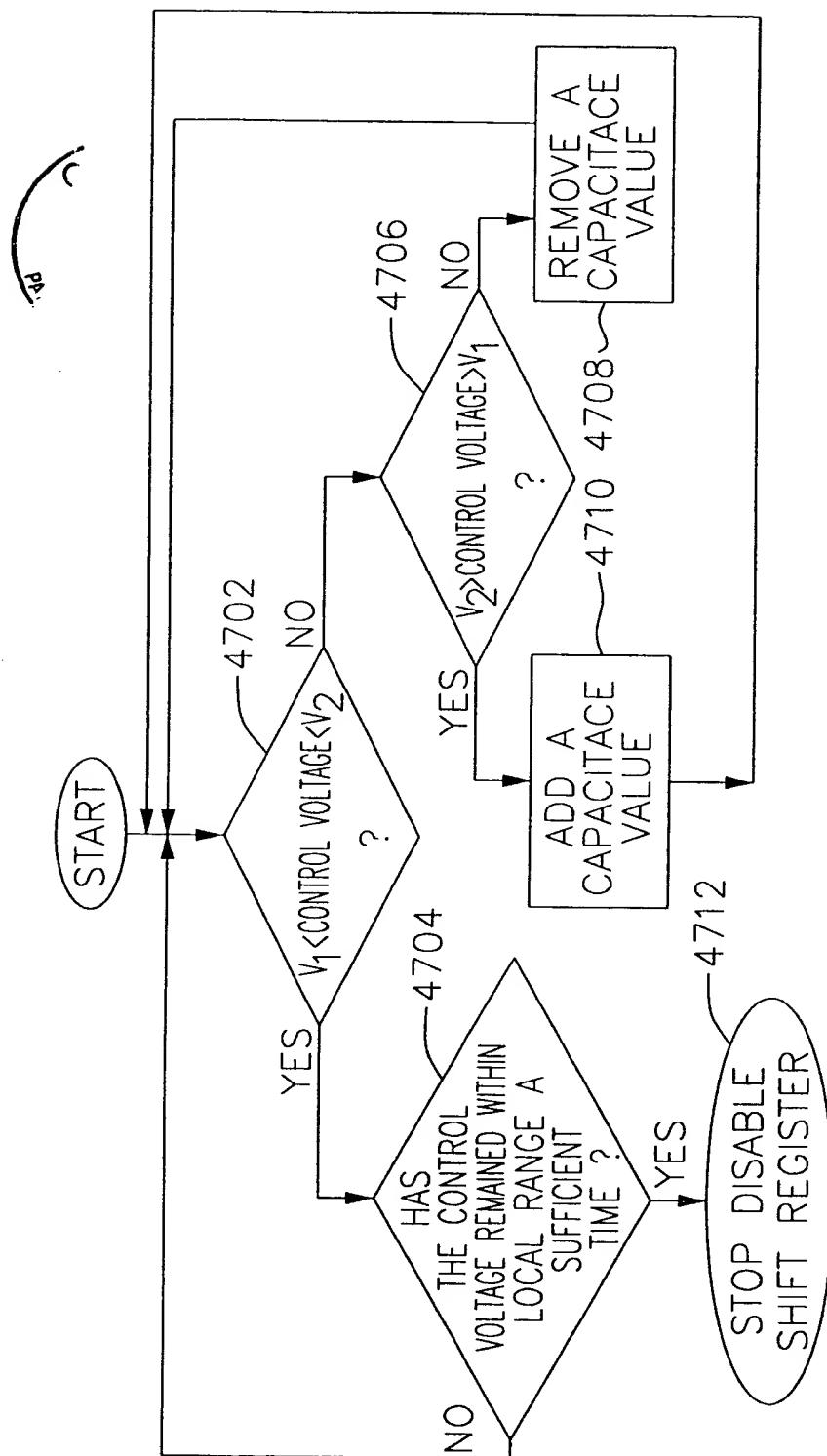




FIG. 48

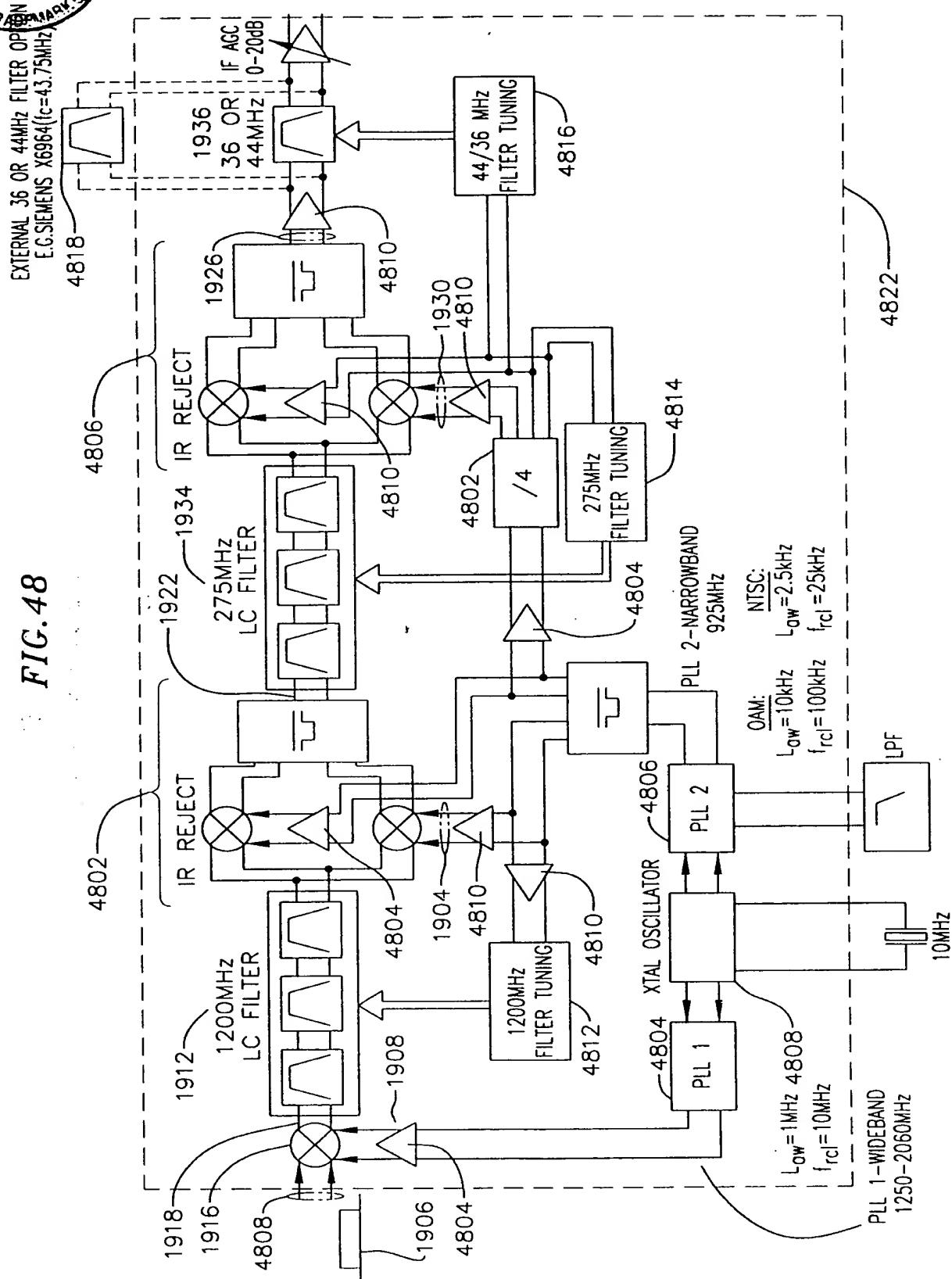




FIG. 49

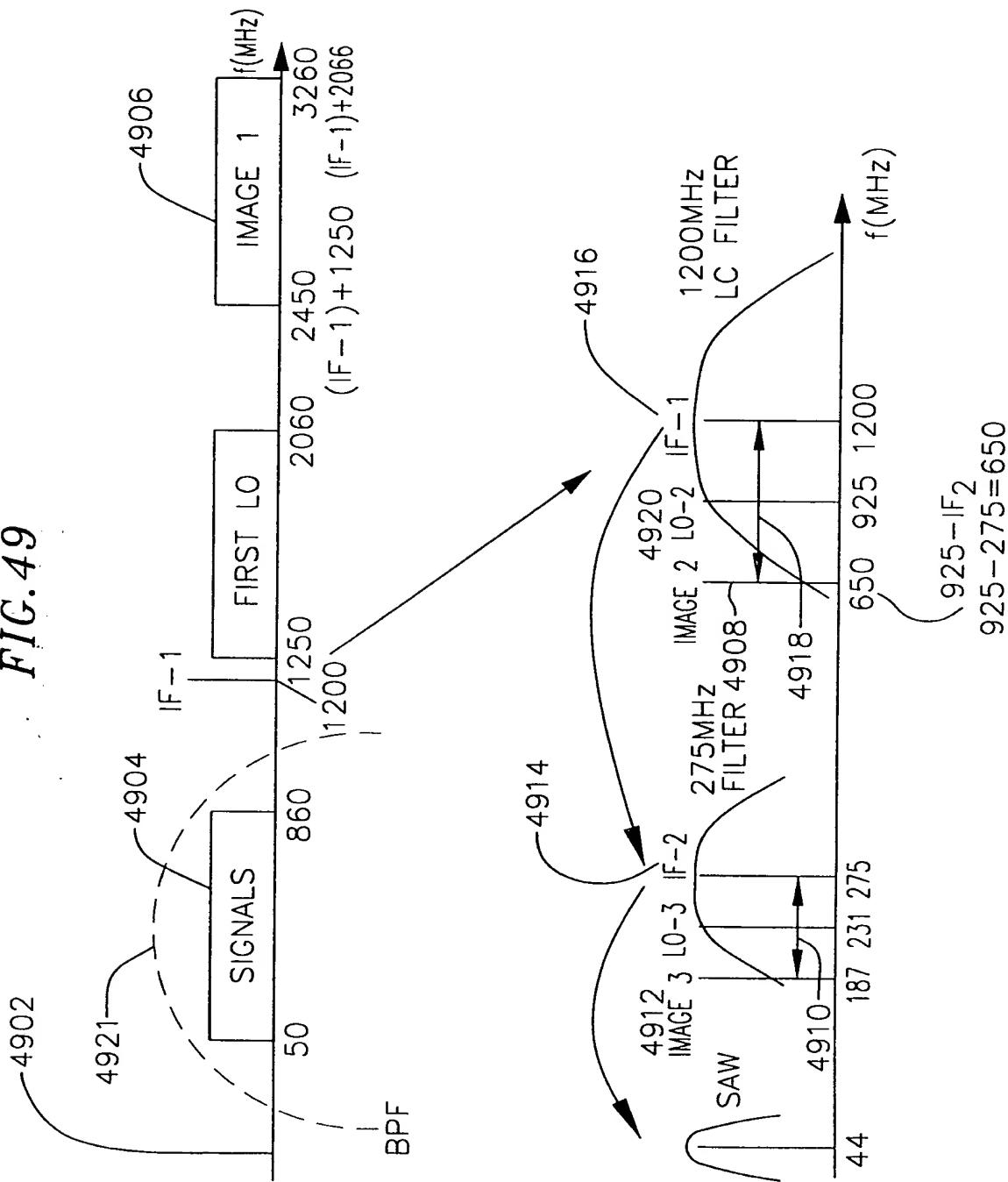
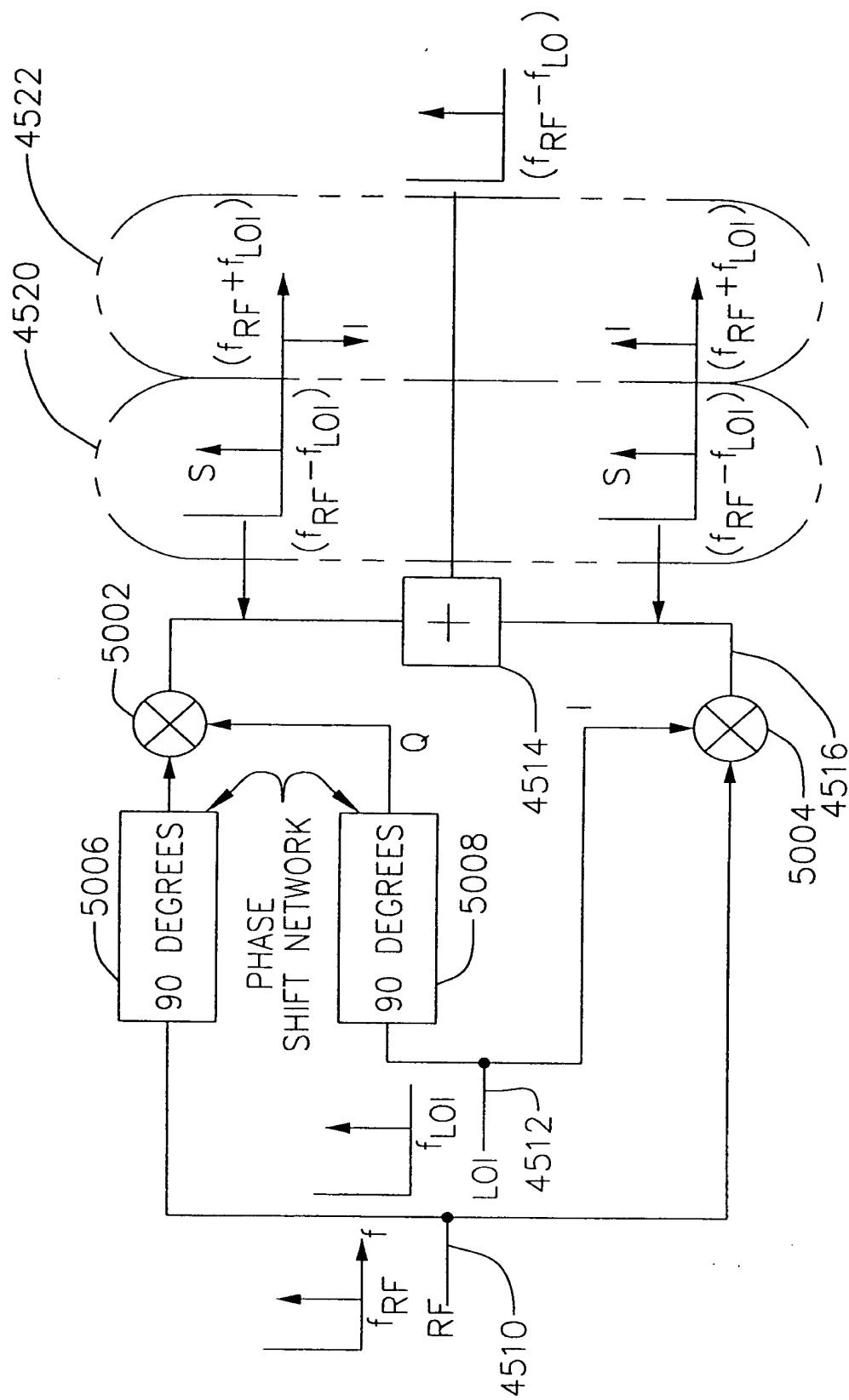




FIG. 50

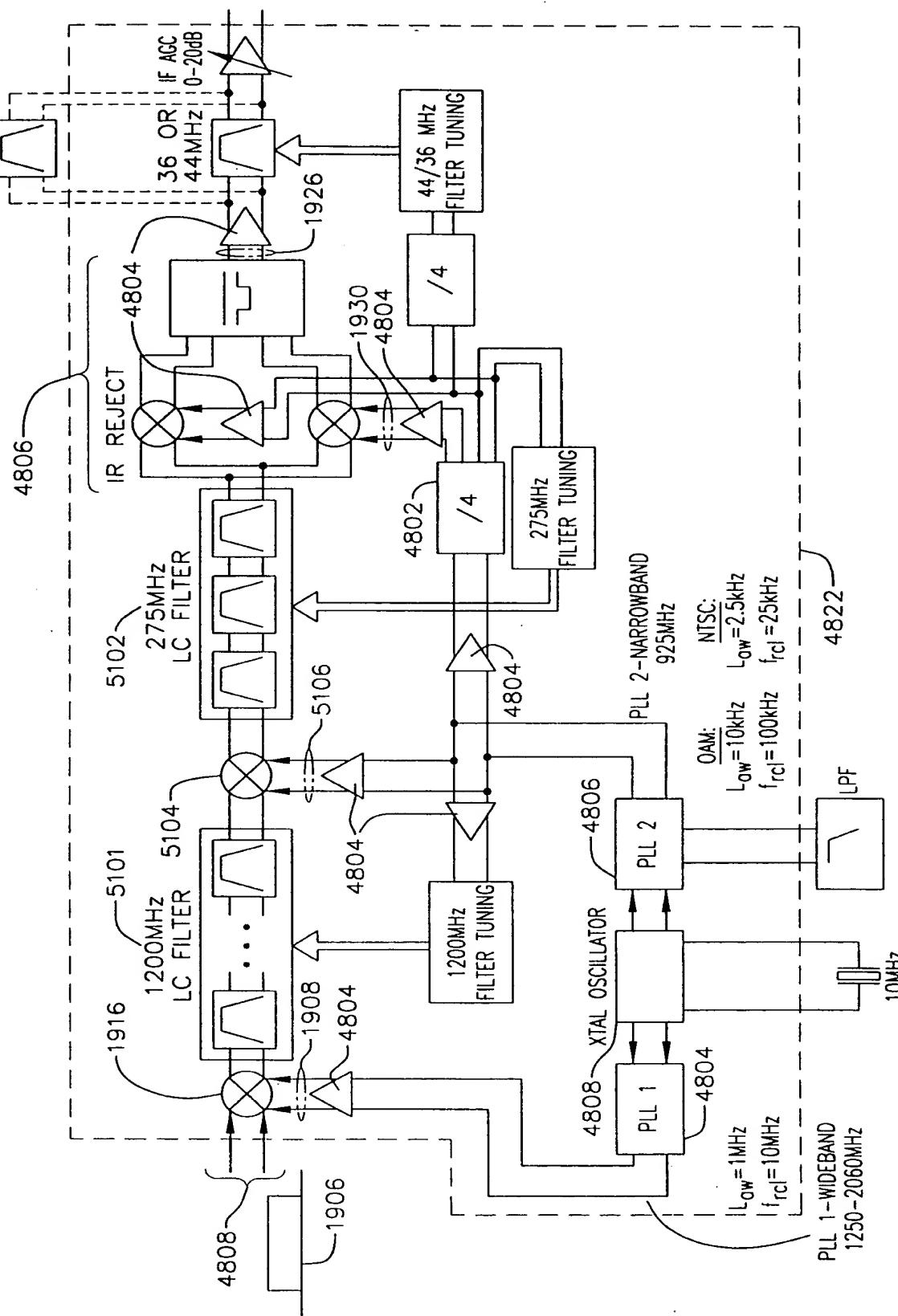




EXTERNAL 36 OR 44MHz FILTER OPTION

E.G. SIEMENS X6964 (fc=43.75MHz)

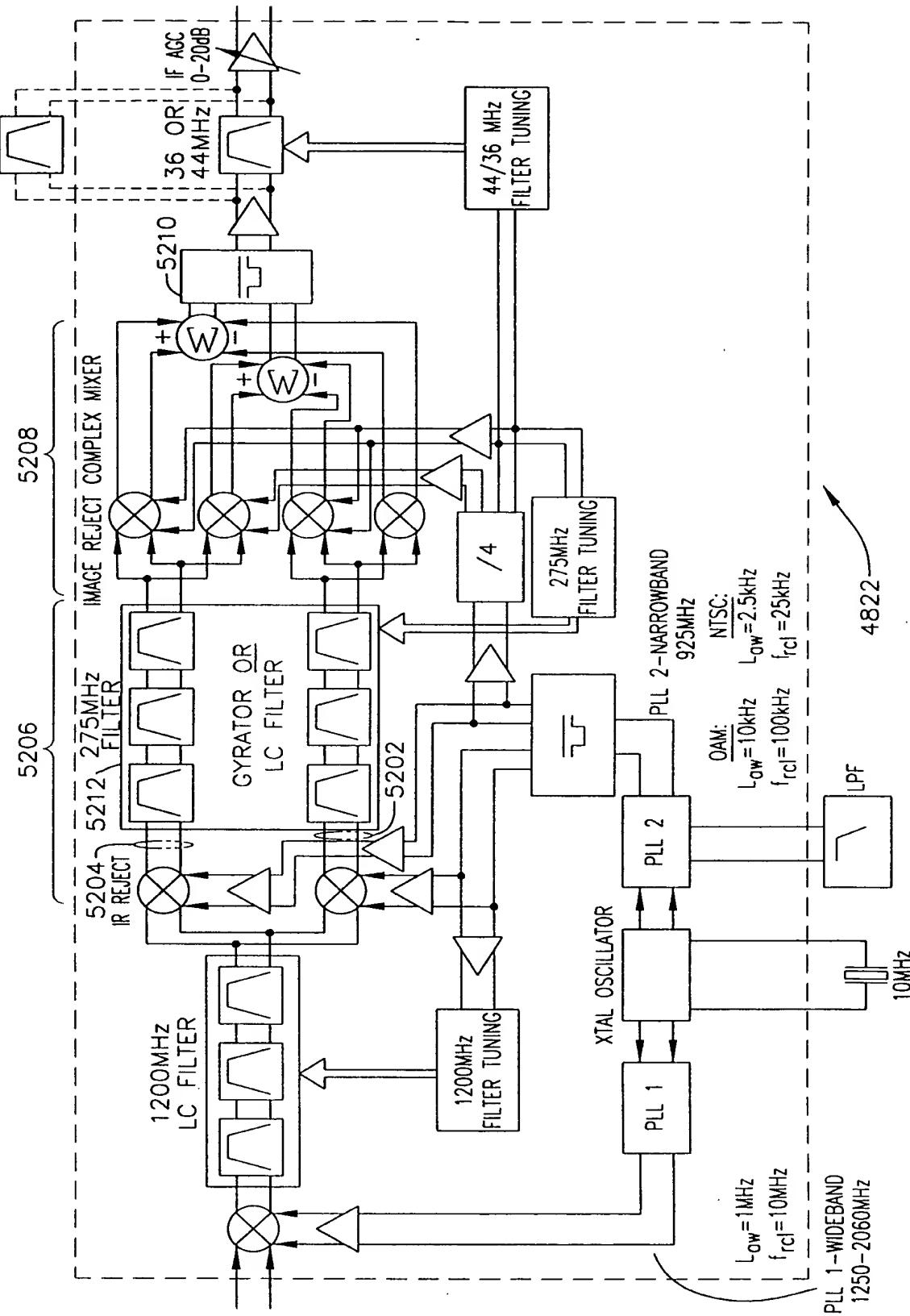
FIG. 51





EXTERNAL 36 OR 44MHz FILTER OPTION  
 E.G. SIEMENS X6984 (fc=43.75MHz)

FIG. 52





**FIG. 53**  
 CATV TUNER

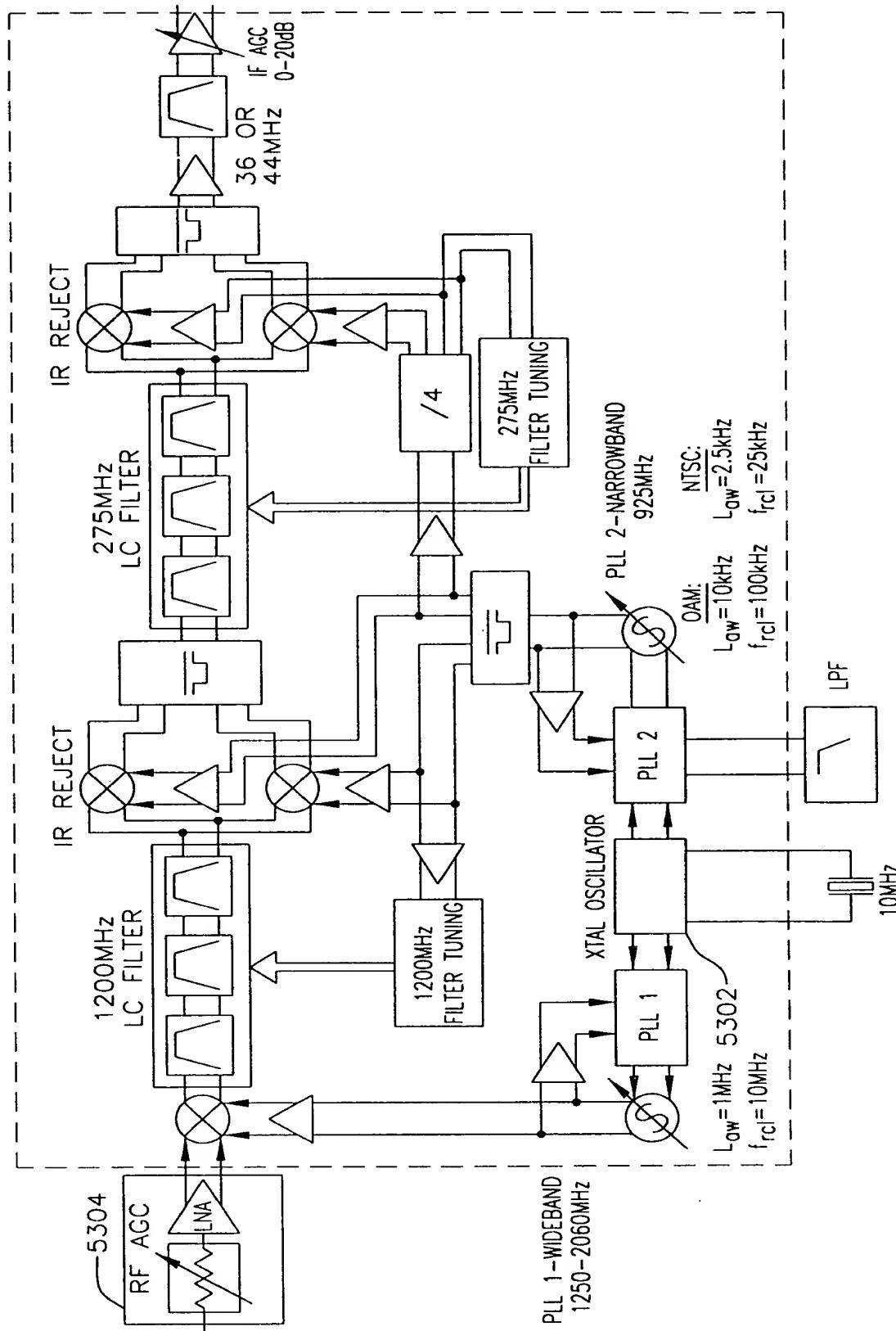
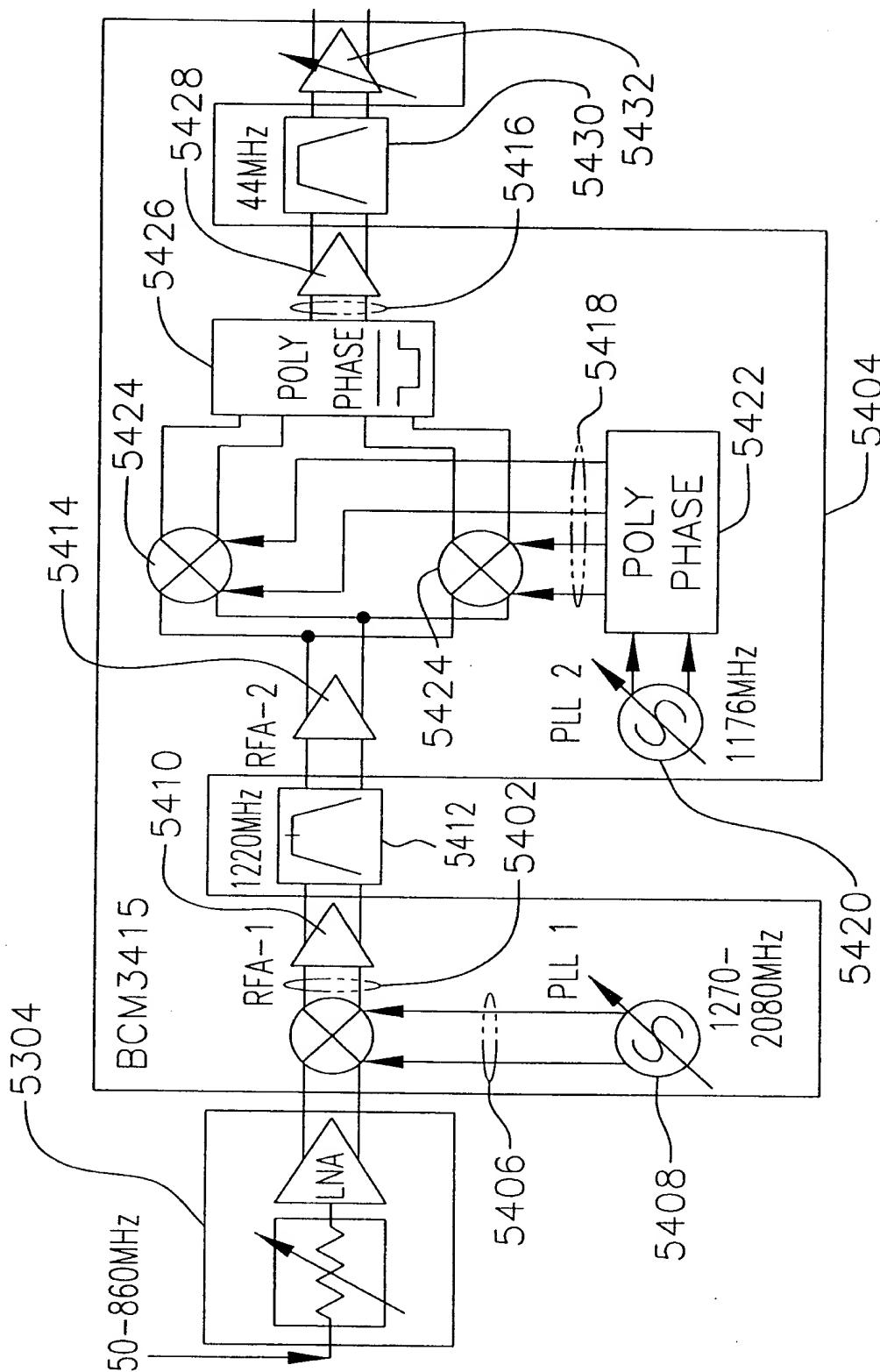
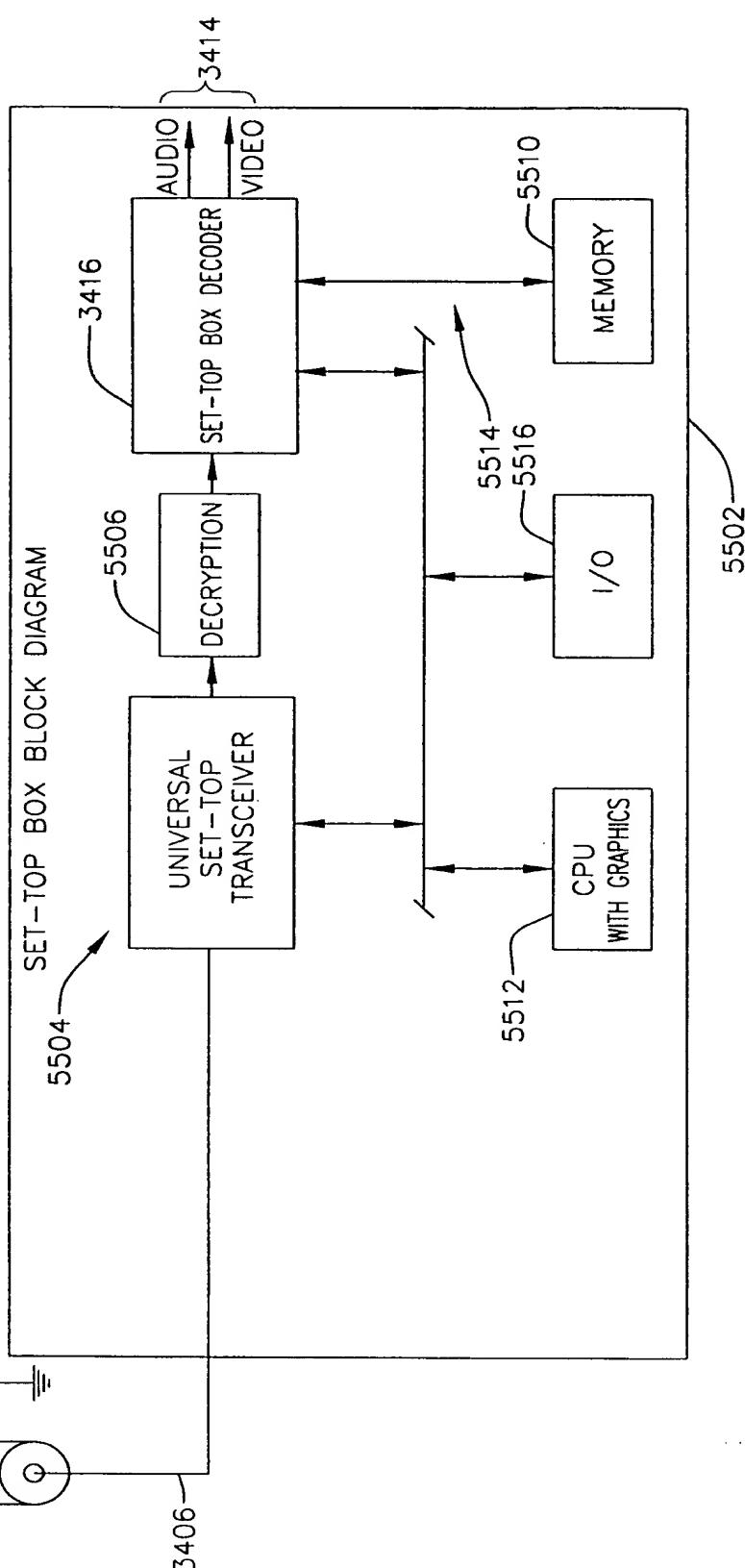




FIG. 54







**FIG. 56**  
 TELEVISION



**FIG. 57**  
 VCR BLOCK DIAGRAM

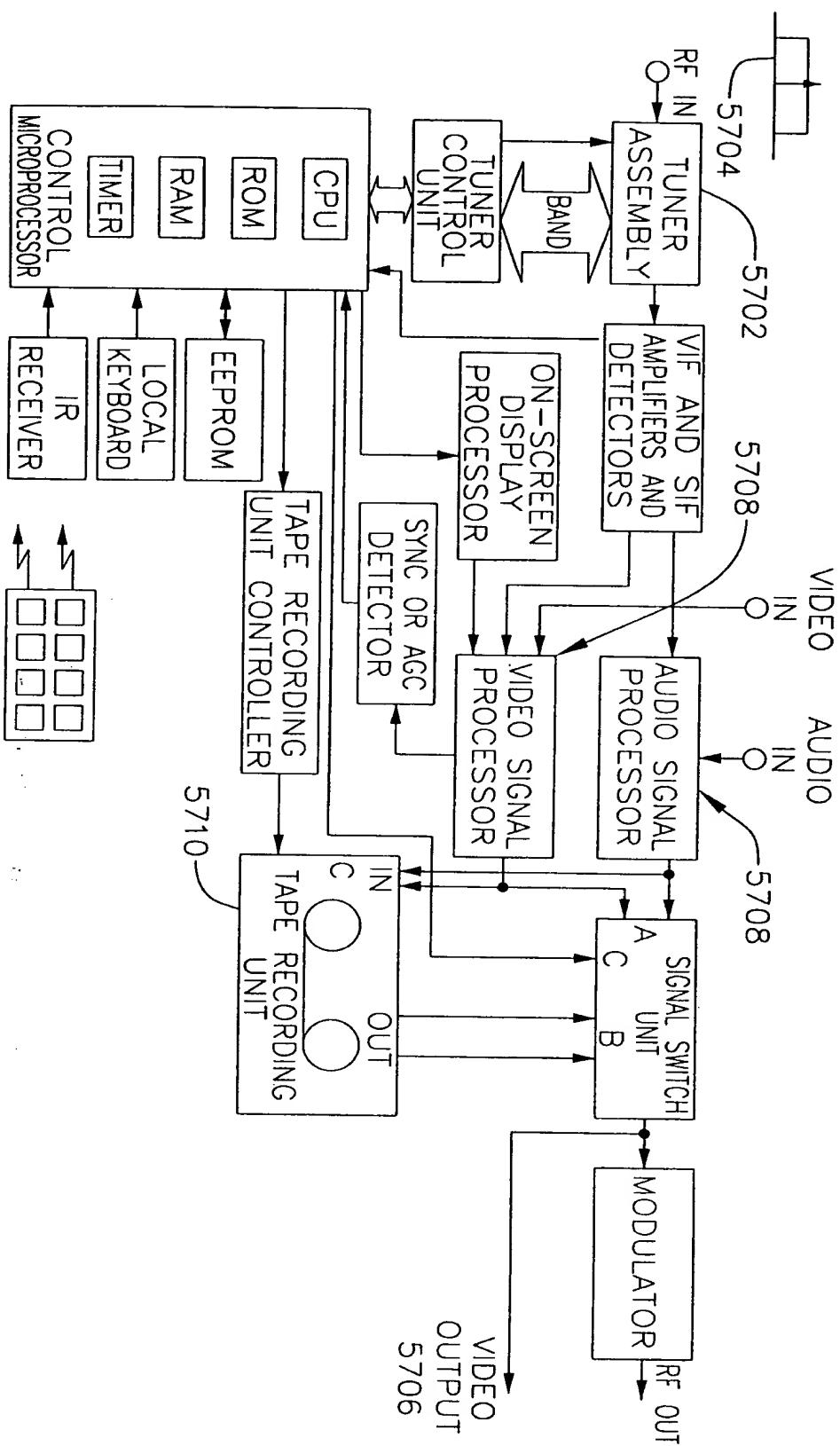


FIG. 58

